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PROPHYLACTIC INOCULATION AGAINST PNEUMONIA

A BRIEF HISTORY AND THE PRESENT STATUS OF THE PROCEDURE *

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We have just passed through—or rather, are passing through—a pandemic of disease, the gross and microscopic pathologic anatomy of which seems to be fairly constant in the hands of many observers and investigators, but concerning the etiology of which we continue to remain in much doubt. This pandemic had high incidence and mortality rates. In the great majority of cases, death was directly due to a bronchopneumonia. In those cases in which a bronchopneumonia developed, the death rate was so high as to be the cause of a panic, which made itself evident in the use of a wide variety of unjustified therapeutic and prophylactic measures.

It is too early as yet to draw any definite conclusions as to the bacterial etiology of the disease. Apparently well founded opinions have been advanced by experienced investigators setting forth diametrically opposed views. Since all the evidence is not yet, by any means, collected, conclusions would be premature and probably fallacious. Whether the cause has been the Pfeiffer bacillus, which has taken on extreme virulence, or whether a filtrable virus, or a streptococcus, *S. viridans* or *S. hemolyticus*, or a heretofore unidentified gram-positive coccus, it is too early to say. Whether the pneumococci of fixed or heterogeneous type are the true etiologic factors in this pandemic, which has cost the world so much in suffering, death and economic values, is not to be determined at this time.

It seems, however, to be agreed by competent observers that the disease itself was one of but transient duration, of from three to five days, in uncomplicated cases; bronchopneumonia was the most frequent of the complications or sequelae; and when this condition superimposed itself, pneumococci were found with regularity in the nose, mouth, pharynx and sputum of these patients. Since the mortality in the cases of bronchopneumonias was very high (during the height of the pandemic, 50 per cent. would have been a conservative estimate), ample opportunity for necropsy presented itself. Direct smears from lung tissue, and cultures from lung, bronchi, heart's blood, pleural, pericardial and peritoneal fluid, and from the spinal canal demonstrated the same regularity of the presence of pneumococci of the fixed and heterogeneous types. The presence or absence of other organisms does not bear on the subject in hand, though it might be said in passing that in a high proportion of cases, when careful technic was used, the pneumococci were found in pure culture. This fact has again stimulated research work on the pneumococcus, and has caused investigators and practitioners throughout the world to inquire, "Just what is the present status of prophylactic inoculation against pneumococcal infections?"

A bird's eye view of this subject presents, first, the great preponderance of the work on therapeutic measures in contradistinction to prophylactic measures, and, secondly, the apparent apathy of the profession as a whole concerning the prophylaxis of a disease that is of such vital and economic importance.

Theoretically, any disease of microbic origin, in which spontaneous recovery is at all possible, should yield to specific prophylactic measures. That recovery from pneumonia is spontaneously possible has long been known. During the years from 1881 to 1885, Pasteur[1] and Sternberg[2] produced a fatal septicemia in rabbits, and Frankel[3] and Weichselbaum[4] established the causal relationship of *Diplococcus pneumoniae* in lobar pneumonia. This was a great step in advance; but, though a large amount of work was done in the interim, some of which was highly confusing, it was not until Neufeld,[5] in 1900, determined the diagnostic value of the fact that pneumococci are soluble in bile, that the next step was taken. This knowledge enabled investigators to fix their attention on pneumococci, and rule out those bacterial forms so similar in morphology and cultural characteristics.

It had been noticed, however, that strains of pneumococci from different sources have different properties.

In 1909, Neufeld and Händel[6] definitely established the fact that some strains of disease-producing pneumococci had truly measurable antigenic properties. By injecting into animals a vaccine of a particular strain of pneumococci they were able to awake in that animal an immunity response. They also devised the method for measuring that immunity by conferring a passive immunity on a white mouse by injecting it with serum from the vaccinated animal, and then subjecting that mouse to an otherwise fatal dose of living pneumococci of the same strain. This fact, concern-

* From the Department of Pathology, Army Medical School.

1. Pasteur, L.: Bull. de l'Acad. de méd., 1881, Series 2, p. 94; Compt. rend. Acad. de sc., 1881, **92**, 159.
2. Sternberg, G. M.: Bull. Nat. Board of Health, 1880-1881, **2**, 781.
3. Frankel, H. Z.: Klin. Med., 1886, **10**, 426.
4. Weichselbaum, A.: Med. Jahrb., 1886, n. f., **1**, 483.
5. Neufeld, F.: Ztschr. f. Hyg., 1900, **34**, 454.
6. Neufeld and Händel: Ztschr. f. Immunitätsforsch., Orig., 1909, **3**, 159.

ing that particular Neufeld strain of pneumococci (which later became the Group I of Dochez and Gillespie, or Group C of Lister), is the basis on which prophylactic inoculation against lobar pneumonia is built.

We were then on a footing where rapid strides could be made. A therapeutic serum was the direct outcome of the foregoing discovery, but interests us, in prophylaxis, only in passing. The predominant fact stood out that a certain strain of disease-producing pneumococci could stimulate, in an animal, a specific immunity response to that one particular strain. The word "group" should replace the word "strain," for it was found that the "Neufeld strain" was not limited to a race of pneumococci, but was found as Type I in widely separated cases.

GROUPS OF PNEUMOCOCCI

The logical outcome of this work was an investigation of the groups into which pneumococci might be divided, on a basis of their ability to stimulate *specific* antibody production.

In 1913, Dochez and Gillespie[7] in America, and coincidentally, though independently, Lister[8] in South Africa (where lobar pneumonia has been a problem of paramount importance), published their classification of the groups of pneumococci. Dochez and Gillespie used the protection tests of Neufeld, and specific agglutinations to evaluate their results; Lister used phagocytosis and specific agglutinations to arrive at his conclusions.

Dochez and Gillespie divided all pneumococci into four groups:

Group I (the Neufeld strain), distinct in its antibody stimulation.

Group II, culturally indistinguishable from Group I, but specifically distinct in its antibody stimulation.

Group III (*Pneumococcus mucosus*), identified by its morphology and its peculiar cultural characteristics. (Later its specific antibody stimulation was more definitely brought out.)

Group IV, all strains that would not fit into the preceding groups, irrespective of the fact that they stimulated an antibody specific for the strain, or stimulated no antibody. Into Group IV fit many of the saprophytic strains found in human mouths.

Lister was able to carry his classification somewhat farther than Dochez and Gillespie because of the greater multiplicity of groups prevalent in South Africa, and because of his added work in the heterogeneous group.

While the original classification of Dochez and Gillespie still stands, and is now quite familiar to the profession in America, Lister's classification has undergone additions until now he groups them as A, B, C, D, E, F, G, H, J, K, X and unclassified. Group A, numerically most important in South Africa, is unknown in America. Groups B, C and E are identical with Dochez and Gillespie's Groups II, I and III, respectively.

In general, Lister classified the pneumococci into a number of groups, ten in number, into which most pneumococci may be classified according to their group antigenic qualities, another group into which strains stimulating antibodes only against the specific strain, and an unclassifiable group into which are placed those few strains (3.3 per cent.) that give rise to no antibody production when injected into animals.

The relative importance, as measured by incidence and mortality of the pneumonias caused by these several types, varies from time to time and with localities. This fact does not seem to have been accorded the recognition it might better have received. While Groups A, B and C are of prime importance on the Rand, Group H, in a localized epidemic, suddenly sprang into prominence, and had to be specifically considered in prophylactic measures. The numerical preponderance of certain types of pneumococci in certain localities, during the pandemic, has called attention to this fact. The recent report of Friedlander and co-workers[9] at Camp Sherman called attention to this phase of the subject. They reported an incidence of about 80 per cent. of Type IV in their pneumonias. An analysis of these IV's and a consideration of them in the construction of a vaccine for use in that particular locality would have been logical. That such an analysis is feasible is indicated by the work of Olmstead,[10] and should be carried farther.

Particular attention is directed to Lister's classification, for two reasons; first, because it emphasizes the need of further investigation and classification within our American Group IV, and, second, because it demonstrates the multiplicity of factors to be considered in specific prophylaxis against lobar pneumonia.

WORK OF WRIGHT AND OF LISTER

It is unfortunate that so great an authority as Sir A. E. Wright, and his co-workers, should have undertaken an extended experiment in the inoculation of a large number of mine workers, in South Africa, at a time that was so unripe.

Between the time that Neufeld established the antigenic value of pneumococci, and the time that Dochez and Gillespie, and Lister established the varieties and specificity of the groups of pneumococci (namely, in 1911 and 1912), Wright and his co-workers[11] vaccinated a large number of native South Africans.

In the preparation of their saline vaccine they necessarily did not take into consideration the predominant types against which this measure was aimed. Further, in those cases of pneumonia that developed after vaccination, no cognizance could be taken of the groups to which the etiologic organisms belonged. Their results were evaluated by estimation of opsonic indexes—a method that has fallen into much popular disfavor, and by statistics, employing groups of "controls" for comparison, a method that brought about much argument concerning the method of selection.

In a historical study of pneumococcal vaccination, Wright's work must, of course, be considered; in a critical study of the subject it would be better to consider his work only in passing, lest the inopportune time at which it was undertaken and the paucity of our knowledge at that time befog any conclusions that might be drawn.

Lister's work, however, was built on an entirely different foundation. He was well armed with the

7. Dochez, A. R., and Gillespie, L. J.: A Biologic Classification of Pneumococci by Means of Immunity Reactions, THE JOURNAL A. M. A., Sept. 6, 1913, p. 727.
8. Lister, F. S.: Pub. 2, South African Inst. for Med. Research, 1913.
9. Friedlander, Alfred; McCord, C. P.; Sladen, F. J., and Wheeler, G. W.: The Epidemic of Influenza at Camp Sherman, Ohio, THE JOURNAL A. M. A., Nov. 16, 1918, p. 1652.
10. Olmstead, M.: Jour. Immunol., 1917, **2**, 425.
11. Wright, A. E., et al.: Lancet, London, 1914, **1**, 1, 87.

knowledge of the types that predominated in his field of endeavor, and could take the selection of those strains into consideration in constructing his vaccine. The many technical difficulties of producing large numbers of pneumococci in a concentrated form were somewhat reduced by his apt adaptation of a cream separator for centrifugalizing broth cultures. Above all, his knowledge of the types of pneumococci permitted him to evaluate correctly the significance of those cases of pneumonia that did follow his inoculations.

Forearmed in such a fashion, he was enabled to construct a vaccine, limited to those types most potent in the production of lobar pneumonia on the Rand, namely, Groups A, B and C. He determined by extended animal experimentation that these vaccines intravenously, and subsequently subcutaneously, gave rise to demonstrable antibodies. A limited number of intravenous inoculations in human beings was next tried, but the apparent impracticability of such a method caused it to be discarded, though antibody production was good. A limited number of subcutaneous vaccinations in man then assured him that this method was not only productive of results, but quite applicable to large groups of native laborers. Pneumococcus vaccines are noticeably less toxic than many others we are more familiar with, and, coupled with the fact that the South African native is slightly disturbed by bodily discomfort, Lister was able to inoculate a large number of these natives subcutaneously, each with three doses of a saline vaccine, of high bacterial content, at seven day intervals, without undue disturbance.

He was able to keep a large proportion of these subjects under observation for a period of nine months or longer, and his results are startling. It would be presumptuous to try to sum up such a monumental work in a few words. To those interested in this subject Lister's most recent publication[12] is earnestly commended.

His Crown Mine experiment is of particular interest. During a nine months' period, approximately 11,000 natives were inoculated with a vaccine that included Groups A, B and C. During that time, in these 11,000 vaccinated natives, eighty-two cases of lobar pneumonia resulted, but not a single case was caused by a pneumococcus of either Group A, B or C. Had the prevalence of Groups A, B and C remained constant with the other types, lobar pneumonia cases due to Groups A, B and C to the number of 120 would have developed.

There seems to be no doubt, then, judging from Lister's work, that, if the prevalent types of pneumococci be considered in the elaboration of a vaccine, sufficiently rich to be effective, that vaccine should be almost 100 per cent. efficient *for the specific types.* (Lister rather inclines to large doses and considers a total of 6,000 million cocci of each group against which protection is sought as the minimum.) Three inoculations at intervals of seven days are necessary, and the local and systemic reactions following the vaccinations are far outweighed by the beneficial results.

As a matter of fact, these published results are so good that one is apt to recall the proverb, "Timeo Danaos et dona ferentes."

12. Lister, F. S.: Publications VIII and X, South African Inst. for Medical Research, 1916 and 1917.

WORK OF CECIL AND AUSTIN

Their true worth is practically vouched for, and the results amply confirmed by the recent work of Cecil and Austin.[13] They prepared a saline pneumococcal vaccine of Types I, II and III, much after the fashion of Lister. This vaccine, under the direction of Colonel Russell, was used at Camp Upton, to vaccinate 12,519 men. Animal experiments and limited ones in human beings had served to demonstrate that this vaccine had antigenic effect, measurable by agglutinins, and the protection the serum of vaccinated individuals conferred on mice. The vaccination of troops began Feb. 4, 1918, and these troops passed from observation about April 15, 1918, making the period of study about ten weeks. The three inoculations were given at seven day intervals, except in those cases that showed a marked reaction after the first or second dose, in which cases it was discontinued. For the sake of simplicity, their results might be tabulated as in Table 1. Any more critical analysis of these figures or cases serves only to accentuate the apparent efficacy of the vaccine.

It will be noticed that a Type I, II and III vaccine seemed to prevent practically all cases of pneumonia

TABLE 1.—INCIDENCE OF PNEUMONIA AMONG VACCINATED AND UNVACCINATED TROOPS: RESULTS OF CECIL AND AUSTIN *

Pneumonia Cases of Types	Vaccinated, 40%	Unvaccinated, 60%
Type I	1†	10
Type II	0	9
Type III	0	7
Type IV	9‡	23
Streptococcus hemolyticus	6	72
Streptococcus viridans	1	34
Undetermined	0	7
Total	17	172

* Average strength of command, 3,200.
† Developed twenty-four hours after first injection.
‡ In three cases only one injection was given.

due to those types, and caused an apparent protection, not only against Type IV, which might have been suggestive of cross protection, but also against *Streptococcus hemolyticus* and *S. viridans.* The authors offer no explanation of this fact. It is possible that so much foreign protein injected into the human being has caused him to mobilize his ferments and leukocytes, as demonstrated by Jobling and Petersen,[14] to the increase of a natural resistance. It is further possible that this change in ferment-antiferment balance has conferred on the individual, besides the specific immunity, an additional resistance against a large number of other bacterial invaders.

There is little room, therefore, to doubt that saline pneumococcal vaccination is highly efficient for the specific types contained in the vaccine. Within that limitation, it bids fair to rival typhoid vaccination, about which there has for some time been no doubt.

SALINE VACCINE AND LIPOVACCINE

The saline pneumococcus vaccine has the advantage of being an efficient prophylactic. It has, however, certain distinct disadvantages. Production of such a vaccine on a large scale has always been a difficult, trying and somewhat expensive procedure. The time limit on such a vaccine, owing to compara-

13. Cecil and Austin: Jour. Exper. Med., 1918, **28**, 19.
14. Jobling, J. W., and Petersen, William: The Nonspecific Factors in the Treatment of Disease, THE JOURNAL A. M. A., June 3, 1916, p. 1753.

tively rapid autolysis, must be short, and this would serve to increase its price, an important consideration when widespread measures are contemplated. It must be given, so that a sufficiently large dose to be effective is administered, in at least three, preferably more doses, at seven day intervals. The difficulties that this offers to the general use of a prophylactic measure are most obvious to one who has worked in the public health field, though the rural practitioner, advocating the saline typhoid vaccine, has had ample opportunity to feel this disadvantage.

While pneumococcal vaccines in general are not so toxic as typhoid vaccines, the fact that quite frequently a saline injection is followed by a sharp reaction militates strongly against its general use.

Almost all of the foregoing disadvantages are overcome by the use of a pneumococcus lipovaccine. A lipovaccine is one in which the bacteria are suspended, not in saline solution, but in an oil or lipoid vehicle. By this means autolysis is greatly prevented, absorption is slow, and massive doses can be given at one injection, thereby reducing the number of inoculations to one. Not only does the oil retard absorption, but there is good cause to believe that the lipoid substances serve directly to reduce the toxicity. Such a vaccine was first elaborated by Le Moignic and Pinoy[15] for triple typhoid vaccine, and has been adapted by the Army Medical School[16] to a wide variety of vaccines.

As early as December, 1917, a pneumococcus lipovaccine had been elaborated at the Army Medical School.[17] Colonel "W" received the first dose, and, along with Capt. "C," the other subject, responded by the production of agglutinins. The reactions to the vaccine were so mild that Colonel "W" repeated the vaccination on the two succeeding days, the third dose being followed by a slight chill. In each of these doses he received the total of three saline doses.

The work on the pneumococcus lipovaccine was somewhat delayed, owing to the fact that a triple lipovaccine had to be perfected, one that subsequently came into use in the Army to the exclusion of the saline vaccine.

Animal experiments with the pneumococcus lipovaccine of Types I and II seemed to show some protection as a result. A direct systematic comparison was then made between two types of saline vaccines, one of the latter being the one in use, at that time, at Camp Upton, which was to show, at a later date, such excellent results.

In these tests, one of the lipovaccines, which could be given in one dose and which caused only a slight reaction, was found to be so far superior to the other three types that it was made on a slightly larger scale and altered by the addition of Type III and used, to the extent of about 25,000 doses, in the military camps. This was a vaccine of high bacterial content, but the reactions following were very mild. The reports, following its use, and the coincidental pandemic, with the attendant pneumonias, confirmed the wisdom of adopting this vaccine as a general but voluntary measure in the Army, a step that had been taken some time previously.

15. Le Moignic and Pinoy: Compt. rend. Soc. de biol., 1916, **79**, 201, 352.
16. Whitmore, E. R.; Fennel, E. A., and Petersen, W. F.: An Experimental Investigation of Lipovaccines, THE JOURNAL A. M. A., Feb. 16, 1918, p. 427.
17. Whitmore, Fennel and Petersen: Abstracts of Bacteriol., 1918, **2**, 16.

It is to be emphasized that this was not a vaccine, developed over night, as a prophylactic against influenza; it was a vaccine aimed at pneumococcal infections, developed systematically at a time considerably antedating the present pandemic.

This lipovaccine seems to overcome all the difficulties associated with a saline vaccine except the expense and ease of production. It is somewhat more laborious to produce such a vaccine, and the use of oil and the mechanical equipment necessary make it more expensive.

UNITED STATES ARMY VACCINE

The particular type of vaccine in use in the U. S. Army is made as follows:

The three types of pneumococci are grown separately in a beef infusion broth, incubated not more than eighteen hours, and the organisms recovered by the use of a continuous feed type of centrifuge, a perfection of the type used by Lister. On this centrifuge, spinning at a rate of 40,000 revolutions a minute, depends the effective removal of the pneumococci. The organisms are thus secured in the form of a heavy mass of about the consistency of library paste. This mass, under glass hoods and under aseptic conditions, is then smeared in thin layers over the bottoms of Petri dishes, which are next covered with an earthenware top. In these Petri dishes the bacterial material is then brought to complete desiccation in a 53 C. incubator, liberally supplied with unslaked lime. The average water loss is about 80 per cent. This drying process is a matter of only a few hours, and little morphologic change in the organisms takes place, since they may again readily be suspended in saline and present themselves as gram-positive cocci of sharp, clear staining characteristics.

This material, now dry, readily flakes off from the glass, and is pooled, again under the hood, into one container. It is then measured out by weight to establish the dosage. The decided advantage of the use of weighed quantities of dry bacterial material to determine the dosage is, after a moment's thought, quite apparent. Many of the fallacies attending dose determinations in saline vaccines are obviated by the use of weights. It has been found that a unit of dry bacterial mass represents a fluctuating number of bacteria, depending on the virulence of the organisms, cultural environment and time of incubation.

The Army vaccine contains dry material equal, in round numbers, to 10,000 million of each type. Those figures are, of course, only relative, and it must be insisted on that dosage by weight is constant, while dosage by count is notoriously fluctuating and inaccurate.

After the dry material has been carefully weighed under sterile conditions, and calculated so that each cubic centimeter of the finished vaccine will contain 0.83 mg. of each type, the bacterial flakes are placed in a sterile grinding jar, along with sterile steel ball bearings, the jar is placed on a mill, and during the course of twenty-four hours the bacterial mass is ground to a fine, amorphous powder. At the end of that time a mixture of anhydrous lanolin and cottonseed oil, in a proportion of 1:2, is added, so that the completed vaccine shall contain 2 per cent. of lanolin. The mass is then thoroughly emulsified by grinding twelve hours, at the end of which time cottonseed oil is added to make the final dilution, along with 0.5 per cent. chlorbutanol as a preservative. The grinding is then continued twelve hours. The oil and the lanolin-oil mixture has been sterilized by autoclaving at 15 pounds for thirty minutes.

This completed vaccine is then subjected to rigorous cultural tests, and is finally injected into animals, to insure sterility. It is then ampuled and distributed for use. Its administration is a simple matter if a needle of 23 gage or any larger bore is used. While sedimentation does occur, cottonseed oil is only so slightly viscid that an even suspension is easily attained by slight shaking.

Several commercial firms are now actively producing, or preparing to produce, a vaccine modeled on the foregoing plan. Supervisional tests, by the gov-

ernment, of sterility will be a relatively simple matter; tests to evaluate the antigenic efficiency of the vaccine will be attended by greater difficulties. These, however, no doubt will be met.

It might be interesting to mention that the Army Medical School has manufactured and sent out for use during October and November, 1918, more than two million doses of this vaccine. The magnitude of this undertaking is better understood when one recalls that Lister, the master himself, said that the manufacture of 40,000 doses for the British government on short notice was out of the question.

RESULTS OF VACCINATION

Much had been hoped for when the tabulated results of this widespread vaccination would have been available. The abrupt cessation of the war, and the rapid demobilization that must follow, will withdraw from observation this large number of vaccinated men. Much valuable information, however, should come to light in the due course of time. Laboratory methods that have stood the test of time were used to test the value of the vaccine, and the results have been found particularly gratifying.

Such a vaccine as is issued by the Army has been injected into human beings, and tests have been made. Ten weeks after injection, 0.2 c.c. of the serum of these subjects almost regularly protects a mouse against 1,000 times a dose of living pneumococci that would otherwise be fatal.

Preliminary clinical reports seem to be highly satisfactory. Some of the unexpected results, such as made their appearance at Camp Upton, seem to be following the use of the lipovaccine. While a specific immunity against the three types of pneumococci in the vaccine was all that was hoped for, a certain freedom from respiratory diseases in general seems to have followed its use. Absence of bronchial symptoms in influenza, after vaccination, was noticeable. While the information at hand is fragmentary, and not to be seriously considered, it may be a straw to show the direction of the wind. For example, fourteen women war workers living in one house were exposed to about the same conditions. Twelve were vaccinated at the beginning of the pandemic in Washington, and remained well and on duty throughout that pandemic. The two unvaccinated ones both contracted influenza. Of a number of men on duty in a Washington fire department, two refused the vaccine; these two alone of that company contracted influenza. Such apparent nonspecific protection seems somewhat visionary until one recalls the fact that even normal brain substance increases resistance against rabies, a disease of specific origin. Vaughan[18] noted this resistance following the injection of his protein split products, Zinsser and Dwyer[19] have discussed it, Joblin and Petersen[20] observed it after serotoxin injections, and Teague and McWilliams[21] noted it after typhoid vaccine shock.

The studies of Jobling and Petersen[20] and of Scully,[22] Culver[23] and Petersen[24] endeavor to explain the modus operandi of this increased resistance.

Studies have been made at the Army Medical School to note the relationship between triple vaccination and streptococcus infection. Medlar[25] shows that triple typhoid vaccination does not predispose to streptococcus infection and might seem to increase the resistance. Smith's[26] study of cytologic changes after the same vaccination might explain some of the nonspecific protection noted.

It is true that to demonstrate increased protection after the injection of foreign proteins it is customary to use large doses intravenously; it is possible that such small doses as 25 mg. (the total content of the Army vaccine) might serve to establish a relative immunity.

In connection with the nonspecific value of a vaccine, and in relation to the particular vaccine issued by the Army, Table 2 might be of interest. Mice, vaccinated with a saline and a lipopneumococcus vaccine, along with control mice, were subsequently

TABLE 2.—RESULTS IN A SERIES OF MICE INOCULATED WITH PNEUMOCOCCUS VACCINE, TESTED TO DETERMINE THEIR RESISTANCE TO HEMOLYTIC STREPTOCOCCUS TWO MONTHS AFTER VACCINATION; SEPT. 15, 1918

Series No.	Date of Vaccine Inoculation	Vaccine	Amount, C.c.	24 Hour Broth culture*	No. of Inoculations	D.	A.	D.	A.	D.	A.	Per Cent. Died	Per Cent. Alive
1 12 mice	7/16/18 7/24/18 8/ 1/18	Saline pneumo.	½ ½ ½	1/25 1/50 1/100	5 4 4	3 1 0	2 3 4	4 3 1	1 1 3	5 3 1	0 1 3	100 75 25	0 25 75
2 12 mice	7/16/18	Lipo-pneumo., unheated	½	1/25 1/50 1/100	4 4 4	4 2 0	0 2 4	4 3 0	0 1 4	4 3 0	0 1 4	100 75 0	0 25 100
3 7 mice	7/16/18	Lipo-pneumo., heated 53 C. (Army)	½	1/25 1/50 1/100	2 3 2	1 1 0	1 2 2	1 1 0	1 1 2	1 2 0	1 1 2	50 66 0	50 33 100
Control 4 26 mice	..... —	..... —	— —	— 1/50 1/100	— 6 20	— 2 1	— 4 19	— 3 3	— 3 17	— 3 4	— 3 16	— 50 20	— 50 80

* Twenty-four hour culture, low virulence Streptococcus hemolyticus.

injected with low virulence *Streptococcus hemolyticus* cultures. It would seem that the lipovaccines render the mouse more susceptible to large doses of streptococci, but render it more resistant to smaller doses. Since the latter case more closely simulates the natural mode of infection, the experiment, limited though the series is, may help to explain some of the so-called "cross protection" results. The more gradual absorption of the lipovaccine might account for the difference between it and the saline vaccine.

"MUSHROOM" VACCINES VERSUS PNEUMOCOCCUS LIPOVACCINE

Consideration of the many "mushroom" vaccines that sprang up over night during the pandemic, and which, besides a multiplicity of other organisms, were made to contain a questionable number of pneumococci, is purposely omitted. That they may have served some purpose in a specific immunity is possible, but hardly probable. In these justly called "shotgun vaccines" the content of the individual groups must necessarily have been so small as to be

18. Vaughan, V. C.: Protein Split Products, Philadelphia, Lea and Febiger, 1913.
19. Zinsser, H., and Dwyer, J. A.: Jour. Exper. Med., 1914, **20**, 387.
20. Jobling and Petersen: Jour. Exper. Med., 1914, **19**, 480.
21. Teague and McWilliams: Jour. Immunol., 1917, **2**, 167.
22. Scully, F. J.: The Reaction After Intravenous Injections of Foreign Protein, THE JOURNAL A. M. A., July 7, 1917, p. 30.
23. Culver, H.: Jour. Lab. and Clin. Med., 1917, **3**, 11.
24. Petersen, W. H.: Serum Changes Following Protein "Shock" Therapy, Arch. Int. Med., November, 1917, p. 716.
25. Medlar, E. M.: Personal communication to the author.
26. Smith, J. W., Jr.: Personal communication to the author.

unable to lift the patient over the threshold of appreciable immunity.

That the vaccines may have had some nonspecific value, comparable with that of the vaccine used at Camp Upton, cannot be denied. However, the burden of the proof rests with the originators of these vaccines, and their value should be weighed on the merits of the vaccines alone. Such a judicial decision is, at this time, of prime importance. We have not passed through the pandemic of influenza with its sequelae; we are passing through it. If the history of the last great pandemic[27] is to be of any value, it should teach us to be on the alert for the recrudescences that must occur throughout this year, as well as in the following three or four years.

It is a better policy to use one instrument, if one is thoroughly familiar with it, limited though its uses may be, than to use a wide variety of unfamiliar, complicated ones.

We feel that pneumococcus lipovaccine is such an instrument. We feel that we have definite assurance that it will prevent infection by Types I, II and III. Epidemiologic studies of localized epidemics, that would justify the addition of purely local types to the vaccine, are to be encouraged. The lipovaccine is such that much additional pneumococcus material may be added, without increasing its toxicity.

The advantages of such a vaccine—its lack of toxicity, its simplicity of administration, and the high degree of immunity conferred—should, during the remainder of this winter, and during the next several years, when we shall most probably be called on to combat recrudescences of the pandemic, with its attendant pneumonia, be a useful weapon. Not only should it have its place in the Army, but also it should be seriously considered by those physicians in charge of industrial ventures, such as mines, steel mills, ship yards and the like. Such a vaccine must come from a source that is unquestionable and one that is capable of massive production. Such a demand from civilian sources might be satisfied by the Army, if the necessary arrangements could be made, until the supply would be forthcoming from normal channels.

CONCLUSIONS

1. Prophylactic pneumococcus vaccination is successful over an extended period of time for those groups represented in the vaccine.

2. A pneumococcus lipovaccine, of slight toxicity, to be given at one injection, has been elaborated, and has had widespread use. Early reports indicate its usefulness.

27. Epidemic Influenza, Therapeutics, The Journal A. M. A., Oct. 5, 1918, p. 1136.

Maternal Nursing and the Sculptor's Model.—Rickets, a disease of nutrition, still too common with us, is but rarely seen in Italy, where it is the universal custom for mothers to suckle their infants, and whence accordingly come those shapely human forms that are chosen by our sculptors and artists for their models. Mothers unquestionably suffer in health and happiness from the suppression of a function which should form a pleasurable and wholesome episode in their existence, and it has been suggested that the prematurely aged and withered appearance of the married women in the manufacturing districts is in some degree attributable to the check imposed on the lacteal process in them by their employment, when that process has been once fully established.—Sir James Crichton-Browne, *Journal of State Medicine*, May, 1918.

AN EXPERIMENTAL STUDY OF THE SURGERY OF LARGE ARTERIES: ANEURYSM

THE PLACING OF MUSCULOFASCIAL INSERTS WITHIN AND THEIR USE IN PATCHING ARTERIES

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It is well known that exposure of blood to extravascular tissue favors clotting. This fact is often used, especially in surgery of the brain, for the control of small bleeding points. However, the ability of normally circulating blood within the arteries to withstand the coagulum-producing influence of foreign tissue has not, to my knowledge, been given special study.

The object of this research was, therefore, to investigate the occurrence of clotting about an intravascularly placed piece of foreign tissue (muscle and fascia). The first conception was that such a condition would rapidly produce clotting, and if the tissue placed within the vessel were of appreciable size, thrombosis would likely occur.

The results of this research, however, have not upheld this first conception, and it has been found that relatively large musculofascial inserts may be placed within arteries (as the aorta of a dog) without producing serious obstruction to the blood current.

The breadth of application of this fact to the surgery of aneurysm or the repair of large blood vessels is evident:

1. The wiring of large aneurysms is inaccurate, and even when, by chance and experience, the wire coils properly, the results have been encouraging in only a few cases. Both the wiring operation and Halsted's rings placed proximally to the aneurysm are foreign bodies in the tissues, and comprise the disadvantages of such measures. The use of musculofascial inserts at the opening of aneurysmal sacs for closing the openings, or so placed as to limit the size of a sac or fusiform aneurysm, is a possibility and led to this research. Furthermore, instead of measures such as Halsted's rings about a large vessel proximal to the aneurysm, it was found that tissue inserts may be used to control the volume of blood passing through the vessel and hence to the aneurysm. The great variety of aneurysms was well appreciated, and the fact was well apparent that much work would be necessary for the application of the method to the different forms of sacs.

2. In the repair of injured vessels, direct intimal apposition has been thought necessary. In the light of this research a patch of fascia, muscle or both may be placed over an injured artery, covering a defect without producing thrombosis of the vessel.

3. In the replacement of segments of vessels, pieces of other vessels have always been used. In dogs, by maintaining a certain part of the circumference of a vessel the balance may be built up with fascia and functionates perfectly, and thus an intimal lining is formed. Its source is open to question and is a problem for further research.

4. In some cases a definite plug of muscle and fascia may be placed against a circumscribed opening in an artery.

The subjoined experimental protocols form a preliminary report:

PROTOCOLS OF EXPERIMENTS

The first series was begun, Nov. 10, 1917, at the Cleveland City Hospital.

EXPERIMENT 1.—A small fox terrier was anesthetized with ether, a midline abdominal incision was made, the intestine was pushed to the right, and the aorta exposed. A No. 2 chromic ligature was passed around it in two places, 1 inch apart between the origin of the renal arteries and the bifurcation, and its pulsations were controlled by traction. A fine dulox skin needle, with silk attached, was passed through the aorta, including the anterior third as a sector. Under traction on this suture, a fine pointed knife was entered beside it, making a slit 1 mm. long in the aorta. A strip of external oblique fascia attached to the thread was drawn through the aorta by means of these two openings. After the passage of the fascia, although the slits had been made, there was absolutely no bleeding. The fascia projected 0.5 cm. on each side. The abdomen was closed in three layers. The dog recovered rapidly from the anesthesia. There was a well marked femoral pulse of 200.

Necropsy.—Jan. 15, 1918, sixty-five days after operation, the dog was killed. When the aorta was slit open through the point of operation, there was no clot present. A piece of intima-colored tissue projected into the lumen 3 by 3 mm. thick.

EXPERIMENT 2.—A medium sized mongrel was anesthetized with ether, the aorta was exposed, and a piece of fascia and muscle 3 mm. wide was passed through it. A single suture was placed on each side of the vessel wall at the proximal end of the opening to control hemorrhage around the transplant. Closure was made in three layers. The femoral pulse after operation was 160.

Necropsy.—Feb. 10, 1918, sixty days after operation, when the aorta was slit open through the site of the insert, the same condition was found as in Experiment 1.

EXPERIMENT 3.—A medium sized mongrel was anesthetized with ether and the aorta exposed. The pulse was controlled by traction sutures. A fine bladed knife was passed through the aorta and a piece of tissue composed of external oblique fascia, muscle and peritoneum was passed through the aorta. The piece was three-fourths the size of the aorta. However, when passed through on tension it was probably not more than half the size of the aorta. Its ends were held together in front of the aorta by one stitch. It was noticed that very slight traction on this tissue in any direction except transversely readily produced hemorrhage around it, but immediately on ceasing to pull and allowing the tissue to contract, the hole in the aorta was plugged and bleeding stopped. Closure was made.

Necropsy.—Feb. 12, 1918, forty days after the operation, the condition was found to be the same as in the two preceding experiments. The amount of tissue present within the lumen was equal to one-fourth the lumen. No clot was present.

The foregoing series was interrupted by my receiving orders for military service. An opportunity did not present itself for continuance of the work until a change of station took me to Fort Des Moines Base Hospital as chief of the surgical service. During my six weeks at this post, the following experiments were completed:

EXPERIMENT 4.—July 30, 1918, a small fox terrier was anesthetized with ether, the aorta was exposed, and a piece of fascia and muscle two-thirds the size of the aorta was passed through it. Three stitches were necessary on the left side proximally to the insert, distally and at a midpoint. A good pulse was present with a thrill over and distal to the insert. July 31, a good femoral pulse was present. The dog was sick. August 1, it died.

Necropsy.—Two days after operation the cause of death was found to be general peritonitis, through some fault in technic. The aorta was slit open over the insert. A clot was present which might be called an icicle clot, since it suggested such a formation. Its base started from and surrounded the insert, from which it tapered slightly to its blunt tip 6 mm. distally. Extending proximally was the same formation 7 mm. long. A pair of lumbar arteries 1 mm. in diameter opposite the clot was not thrombosed.

EXPERIMENT 5.—July 27, 1918, a large brindled bull was anesthetized with ether, the aorta was exposed, and a piece of muscle and fascia two-thirds the size of the aorta passed through its center. Bleeding occurred from the corners of the incision, but was entirely controlled by four stitches. A good aortic pulse with a thrill was present distal to the insert. July 28, the dog was in good condition; there was no weakness of the legs, and a good femoral pulse was present. July 31, a good femoral pulse was present. Under ether anesthesia the abdomen was opened and a good aortic pulse distal to and over the insert was verified.

This observation was made because it was thought possible that the femoral pulse might result from a collateral circulation more easily established in dogs than in man. The pulse, however, was present over and immediately distal to the insert. There was no collateral circulation present. In later experiments, when a thrombosis was intentionally caused, the dogs showed weakness of the hind legs for a variable time after operation.

Necropsy.—Four days after operation, the aorta was slit open through the site of the insert. An icicle-shaped clot was found extending 9 mm. from the insert distally. There was some irregular clot proximal to the insert, attached to it. A pair of small lumbar vessels branching opposite the middle of the distal clot was thrombosed.

EXPERIMENT 6.—Aug. 6, 1918, a large white mongrel was anesthetized with ether, the right carotid was exposed, and two pieces of tissue taken from the neck were passed through it transversely 2 cm. apart. The proximal insert consisted of muscle and cervical fascia 2 mm. in thickness. The distal insert consisted of cervical fascia with some fat attached, 2 mm. in diameter.

August 11, five days after the operation, the carotid was exposed under ether anesthesia; a full pulse was present over and distal to the inserts. The carotid was excised and slit open. The inserts were both present, 2 mm. wide, projecting into the lumen, reducing it by approximately one half. No clot was present.

EXPERIMENT 7.—Aug. 5, 1918, a female (the same animal as in Experiment 8) was anesthetized with ether, the aorta was exposed, and a piece of muscle fascia was passed through a slit 4 mm. long. No sutures were necessary. A good pulse was present below the insert with a marked thrill. From August 6 to 10 the animal was in good condition with a good femoral pulse.

August 11, six days after the operation, under ether the abdomen was opened, and a good pulse over and distal to the insert was verified. When the aorta was slit open, no clot was found. The large insert was present, of the same color as the intima. When it was placed through the aorta at operation, the sides of the vessel had apparently been drawn together and held there, so that only a small segment of insert presented itself to the blood stream, and the lumen of the vessel had been reduced by one third. Thus it is possible to reduce the caliber of an artery markedly by this method. If done proximally to an aneurysm it would greatly diminish the volume of blood passing into the sac as well as the speed of its passage through the sac. This would appear to be a good method for bringing about such a condition of circulation. Whether such a procedure is preferable to the direct attack on an aneurysm by transplants should be later worked out, for the same technic might be used in reducing the size of the sac or its opening. And here seems to be one of the lessons learned by this study: By passing musculofascial transplants, transversely, obliquely and longitudinally, one or all, through an aneurysmal sac, the latter's capacity can be lessened. This, together with the clot-producing power of such tissue when exposed to blood under other conditions favoring clotting, can be used to thrombose entirely an aneurysmal sac. From observations in some of these experiments it seems possible so to place these inserts in a sac that a proper current would be left for vessels branching from it.

EXPERIMENT 8.—Aug. 2, 1918, a small terrier was anesthetized with ether, the aorta was exposed, and a strip of

rectus muscle and fascia one-fourth the size of the aorta was passed through the midpoint transversely. No stitches were necessary. A good pulse with a thrill was present over and below the insert. Closure was done. August 3 to 10 there was a good femoral pulse.

August 11, nine days after operation, under ether, the abdomen was opened and a good pulse over and distal to the insert was verified. When the aorta was slit open, no clot was found. The insert measured 6 by 2 by 2 mm., and was the same color and appearance as the intima. It reduced the lumen of the aorta by fully two-thirds its volume.

EXPERIMENT 9.—July 17, 1918, a large female mongrel was anesthetized with ether, the aorta was exposed, a slit 0.5 cm. long was made longitudinally through both walls, and a piece of external rectus sheath and muscle equal to the diameter of the aorta was passed through. There was no bleeding around the insert. There was a pulse, distal to the insert, with a thrill. Closure was done. There was a good femoral pulse. July 18, the dog was active; a full femoral pulse was present. The condition continued the same till July 31 (fourteen days after operation). Under ether anesthesia the abdomen was opened. A good pulse was felt in the aorta immediately distal to the insert and at the site of the insert, where the vessel was felt thickened and a moderate mass of adhesions was present.

Necropsy.—The aorta was slit longitudinally through the insert, and the insert was accidentally cut. The insert was 6 mm. in diameter, the aorta, 1 cm. in diameter. No clot whatever was present.

EXPERIMENT 10.—July 16, 1918, a small fox terrier was anesthetized with ether, the aorta was exposed, the circulation was controlled as above, a slit 1 cm. long was made through both walls laterally, and a piece of anterior rectus muscle and fascia equal to the size of the aorta was passed through the aorta. Four stitches at the ends of the slits were necessary to control the bleeding. A faint pulse was felt distal to the insert. Closure was made. A very faint femoral pulse was present. From July 16 to July 24, no femoral pulse could be felt. July 25, a faint femoral pulse reappeared. July 25 to August 8, the femoral pulse increased to normal volume, August 8, the animal strangled herself on her tie rope; she had been very well and active.

Necropsy.—Twenty-three days after operation, a section of the aorta, including the iliacs, was excised. The aorta was slit open; no clot was present. The insert was found; it measured 3 by 3 mm.; it was firm, was closely adherent to the anterior wall of the aorta and had a gray, glistening appearance indistinguishable from the intima. It reduced the aortic lumen by two thirds.

EXPERIMENT 11.—July 7, 1918, the same animal as in experiment 4 was anesthetized with ether, the right carotid was exposed, and with a fine knife the anterior half of the vessel wall was excised for 1.5 cm. A piece of external rectus muscle and fascia 3 mm. thick was removed and sutured as a patch over the carotid defect with the muscle surface projecting into the lumen.

July 28, the wound was clean. August 11, twenty-four days after operation, under ether anesthesia, the carotid was reexposed and found to have a full pulse throughout its extent. A small sacculated aneurysm was present, with an opening 4 by 4 mm., a depth of 2 mm., and its cavity 5 mm. at the widest point, occupying the position of the musculofascial patch. The carotid was removed and slit open. There was no clot whatever present. The patch had held firmly but had begun cut to a depth of 2 mm. It contained no clot. The inference from this case is that such a patch, if applied in man, would give rise to an aneurysm. The fate of transplanted tissue in wall lesions, and the resulting scar tissue in this case must be very firm and strong in order to withstand carotid pressure. It looks as though intra-arterial or intravascular transplants would be of greater value in the treatment of aneurysms.

[illegible] on the foregoing work, with [illegible] of the experiments and histologic examinations [illegible] be made later. The exigencies [illegible] make such studies difficult. [illegible] seem fair, and I regret that lack of time will not permit a discussion of the many points of value that have been observed.

SUMMARY AND CONCLUSIONS

1. Strips of rectus fascia with muscle attached of varying size up to three-fourths that of the aorta of dogs may be placed through a dog's aorta or carotid without causing permanent clot or thrombosis. In certain cases no clot at all is formed.

2. In over half the experiments, the contraction of the aortic walls about the inserts and of the inserts against the slits in the aorta entirely controlled hemorrhage. In the remaining cases, from one to four simple sutures controlled bleeding from the corners.

3. These inserts diminished the lumens of the aortas to approximately one-third to three-fourths their former volume.

4. Such inserts may be used to diminish the volume of a large artery, to diminish the orifice of a sacculated aneurysm, to favor thrombosis of the aneurysmal sac by being placed through it, or to limit the size of a fusiform aneurysm by being placed so as to exclude certain sectors from the current.

5. In no cases have symptoms of embolism been noted. The only pathologic observations to exclude such an occurrence were: (a) In two cases examined at necropsy within six days, no clot was formed at all. (b) In four cases examined at necropsy later than six days, no clot was present. (c) In all cases but one, when a clot was formed it took a uniform, blunt tipped icicle shape, was quite firm, and would not easily break off.

6. A patch of fascia or muscle may be sutured to an arterial defect with perfect functional results.

7. The sac of an aneurysm or the vessel proximal to it may be lessened in volume by such inserts.

8. An arterial patch of muscle and fascia in a dog is consistent with perfect function of the artery.

CHRONIC ARSENIC POISONING ON A FARM

REPORT OF A CASE

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History.—A woman, aged 22, seen by Dr. Samuel Ayres of Kansas City, Mo., to whom she was referred by her local physician in Summers, Ark., complained of sore mouth, indigestion, weakness and general tenderness. She had been married two and one-half years; she had had no children nor miscarriages. She had had mumps, measles, whooping cough and scarlet fever during childhood; there had been no operations. Previous to her present illness she had been entirely well. She had had a well-balanced diet. She lived on a farm and had no other occupation aside from her household duties. Prior to five years before she had been employed in a fruit drying factory for three years, where she said that she was exposed to sulphur vapor. She also spent a great deal of time spraying fruit orchards, and said that she ate fruit which had recently been sprayed. The spray, she thought, contained arsenic. This immediately preceded her present illness, which began five years before. On questioning, she was quite sure that she had not been exposed to arsenic during the past five years. She had moved away from the fruit orchard. There was no family history of tuberculosis. A year and a half before, the patient's brother, who was then 22 years old, was operated on for appendicitis, following several intermittent attacks of severe abdominal cramps. The operation gave no relief, and the attacks of cramps had per-

sisted up to the present time. The brother had a papular skin eruption on his face and back. A sister also had had trouble with her skin for some months.

Present Illness.—Skin: Five years before, in May, a papular eruption appeared on the forehead and chin, which spread to the body, chest, back and shoulders, scalp and face. This was diagnosed by a local physician as eczema, and treated by local applications which, instead of giving relief, only made matters worse. The eruption consisted of papules and pustules which bled when opened. Some were as large as the little finger nail, and often ruptured spontaneously, bleeding profusely and soiling the clothing. The condition of the skin had been variable, sometimes better, sometimes worse. For the past year or more there had been a more permanent brownish pigmentation of the face. Heat or wind caused the face to burn and sting.

Sensation: About a year later, or four years before being seen, a burning sensation of the mouth, tongue and lips was noticed. The patient said that her tongue was red, and that the lips were blistered and peeled. The burning sensation later spread to the chest and epigastrium, and at times a sense of burning and tenderness was general over the entire body so that merely touching her caused pain. The patient said that sometimes her hands felt as if they were three times their normal size. They often felt numb, or tingling, and she had frequently cut or burned herself without feeling any pain. About two years before, her eyes began to cause trouble. After looking at objects for even a short time, her eyes would become tired and the vision blurred. At times the patient had lost her sense of smell and taste. For the past three weeks water had tasted bitter.

Digestive Tract: The appetite had been variable; there was no vomiting; the patient was not often nauseated. During the past two years there had been discomfort after eating. From fifteen to thirty minutes after a meal, a heavy feeling was noticed in the stomach, which frequently caused the heart to beat rapidly. Often there was a bitter taste in the mouth soon after eating. Because of these symptoms, and on account of the sore mouth, the patient had eaten but little. For periods of a week or two at a time, the patient had been troubled with an excessive flow of saliva. The bowels were constipated, moving once in two or three days. There had never been any diarrhea. The rectum was sore and burned.

Cardiovascular: At times the heart beat so rapidly that it was quite uncomfortable. This was brought on usually by eating or by overexertion. There was no dyspnea.

General Condition: The patient felt weak. She had lost both strength and weight. Her best weight three years before was 123 pounds; the present weight, three weeks before, 99½ pounds.

Genito-Urinary: Menstruation had been irregular during the past three years, with considerably more pain. Often there had been intervals of from six to eight weeks between periods; one interval lasted five months. The last period was three weeks before. Sometimes there was burning after urination and burning in the vagina. There was no history of vaginal discharge. One and a half years before, after urinating, the patient was seized with a sharp, knifelike pain in the right loin when she attempted to stand up. The pain began in front and radiated to the back. It was so severe that she fell to the floor. Following this attack, she was in bed for eight or nine weeks, and during this time was unable to move on account of the pain, which no longer was related to urination. Ever since then the patient had felt in danger of pain, sometimes with very acute attacks. During the intervals of comparative freedom she was able to bend forward and to move her trunk in any direction. During the past ten days, the pain had been severe, especially if the right arm was raised above the head, or if the right side was pulled or twisted. The pain was in the right side and back, but did not cross to the left of the spine. Frequently there was a dull ache in the spine, back of the head and chest which was unrelated to the pain in the lower back. This ache was worse in damp weather.

Periodicity: The patient had not been entirely well during the past five years. She always felt better in the autumn. Her symptoms all became most noticeable about December. During the past two years, she had been confined to bed during the late winter and spring, on account of the severe pain and general tenderness.

Physical Examination.—The patient was well developed and fairly nourished, conscious and rational, and lay quietly in bed with the eyes closed. The hair was abundant and of fair texture, but short, being only about 10 inches in length; the ends were broken off abruptly. The patient said that her hair used to be of finer texture and about 40 inches long. The skin was rather dry. On the face, most marked on the cheeks, there was a brownish-red pigmentation which was not sharply demarcated, but faded off gradually. There were many punctate papules; to the touch the cheeks felt like a nutmeg grater. On the back between the shoulders, there were small acneiform papules and pustules. There was a wart on the back of the left hand and on the palm of the right, which, the patient said, had been present for only a few weeks. The skin was otherwise negative. The conjunctivae were reddened and the patient kept her eyes closed most of the time because the light caused discomfort. The pupils were regular, equal, and reacted to light. The teeth were fair, the throat negative; the buccal mucous membrane was normal; the tongue was normal, except that the fungiform papillae at the back seemed unusually large and red. The lymph glands were not enlarged. The heart and lungs were normal. There was a slight general tenderness of the abdomen, most marked in the lower right quadrant. No masses were felt. There was no fluid. The patient had difficulty in turning over; the act seemed to be painful. There was no local tenderness in the back. There was no tremor of the hands. There was slight edema of the ankles on pressure. The knee jerks were very sluggish; the plantar reflexes also were sluggish. There was no Babinski reflex. The hand grasp was equal but weak. There was no Romberg sign. The finger-to-nose test was negative. The temperature was normal. The pulse was about 100. Pelvic examination was negative.

Summary.—A farmer's wife, aged 22, had been intermittemly ill during the past five years, worse in the late winter and early spring. The outstanding symptoms were dermatitis with pigmentation of the face, muscular weakness, loss of weight, sore mouth, gastric discomfort, constipation, disturbances in taste, smell and cutaneous sensations, photophobia, menstrual irregularities, tachycardia, and many indefinite pains, aches and burning sensations. She had been unsuccessfully treated by many physicians and had tried all remedies that had been recommended by both physicians and friends.

Before the laboratory findings were considered, four conditions offered themselves as reasonable possibilities in the differential diagnosis. They all fairly adequately accounted for the symptoms as summarized.

1. Neurasthenia or psychoneurosis.
2. Pellagra.
3. Addison's disease.
4. Chronic arsenic poisoning.

Other conditions were thought of, such as renal stone and tuberculosis of the spine, but each accounted for only a part of the syndrome.

With a highly strung and unstable nervous system as a background, any chronic, unsuccessfully treated dermatitis may readily develop into an attack of neurasthenia with a varied host of symptoms similar to those described.[1]

Pellagra must be seriously considered, for it also is characterized by periodicity, weakness, neuritis, gastroenteritis, stomatitis and dermatitis. In the case under discussion, the chief point against pellagra is the character of the dermatitis. In pellagra, the backs of the hands and wrists are usually involved, and whatever region is involved shows a sharply demar-

1. Osler: The Principles and Practice of Medicine, Ed. 8, pp. 1106-1116.

cated area of pigmentation. Here the pigmentation is limited to the face, is diffuse, and is rather more finely papular than one would expect with pellagra.

Addison's disease usually shows a more generalized pigmentation and frequently a pigmentation of the buccal mucosa.

According to the history as it was obtained after careful questioning on several occasions, the only known exposure to arsenic occurred five years before when the patient used arsenic sprays in fruit orchards. For the past three years, she had lived in a different place where there were no fruit trees, and she had not used any spraying mixtures. It is possible that some of her many remedies contained arsenic, but no single medicine had been used longer than a few weeks. Her brother's supposed appendicitis, which had been unrelieved by operation, and her sister's skin eruption suggest that the whole family had been exposed to arsenic.

Laboratory Examination.—Blood: 1. The systolic blood pressure was 120 and the diastolic, 85. This evidence points strongly against Addison's disease.

2. The Wassermann reaction was negative.

3. Microscopic examination revealed: white cells, 12,900; red cells, 4,500,000; hemoglobin, 95 per cent.; the red cells were normal; there were no malarial parasites.

Roentgen-Ray Studies: The teeth, spine, lungs and heart were all normal. There seemed to be some adhesions between the duodenum and gallbladder, but the stomach was otherwise negative; there was no filling defect, and the emptying time was normal.

Gastric Analysis: An Ewald test meal was given. After one hour, 100 c.c. of gastric contents were withdrawn. The odor was normal, there was no retained food, and microscopic examination was negative. Total acidity was 83; free hydrochloric acid, 51. There was no lactic acid nor blood.

Ophthalmoscopic Examination: This revealed dilated retinal veins and contracted arteries. These findings were regarded as unimportant and indicating merely vasomotor changes.

Stool: Macroscopically the stools were of a claylike consistency and rather gray. Microscopically there was bile-stained mucus, and no parasites or parasitic ova.

Urine: The urine was acid; the specific gravity was 1.017; there was slight trace of albumin; there were a few pus cells, red cells, occasional epithelial cells, hyaline casts and coarsely granular casts. A specimen submitted to the Kansas City Testing Laboratory for an analysis of metals was reported as containing: lead, 0; arsenic, 0.000329 per cent. Following this line of inquiry, a sample of wall paper and of well water from the patient's home were also tested for arsenic. The wall paper was found to contain arsenic (As_2O_3), 0.00307 per cent.; the well water was found to contain arsenic (As_2O_3), 0.00044 per cent.

DIAGNOSIS AND TREATMENT

The finding of arsenic in the urine, together with the typical symptoms of chronic arsenic poisoning make the diagnosis practically certain. The patient was once more questioned concerning a more recent exposure to arsenic. The husband then recalled that for the past two years he had used a Paris green mixture in spraying his potato plants. The patient remembered now that this mixture had been kept in a box in the kitchen, and to the best of her knowledge was still there. The fact that Paris green was kept in the house, and also the fact that the wall paper contained arsenic explains the winter exacerbations of all symptoms. At this time the patient spent more time indoors, and the windows were more likely to be closed; hence the greater opportunity to absorb arsenic vapors.

Undoubtedly the patient became thoroughly poisoned with arsenic five years before when she sprayed fruit orchards, and her illness had been prolonged by the subsequent absorption of small amounts of arsenic either from the box of Paris green or from the wall paper or from both. It is well known that in the presence of warmth and moisture, certain molds growing on arsenic wall paper liberate a poisonous volatile compound that is probably an organic derivative of arsenic pentoxid. According to Putnam,[2] "there is nothing more striking in the clinical history of this matter than the fact that a person who has once been poisoned, or who is naturally susceptible, is sometimes affected by exposures that seem absurdly insignificant." Putnam[3] also calls attention to the diffuse brownish pigmentation of the face, painful micturition, and distinctly periodic symptoms (winter and early spring) in addition to the commonly observed gastro-intestinal and nervous disorders.

The treatment consisted essentially in removing the source of poisoning and treating the gastro-intestinal disturbances symptomatically, with daily colonic irrigations of sterile water and a light diet of cooked food. According to latest reports a month later, the patient had improved markedly. The prognosis in this case is good because the peripheral neuritis has not progressed to an irreparable state.

CONCLUSIONS

This is a well marked case of chronic arsenic poisoning with an adequate etiology, and a definite finding of arsenic in the urine. The syndrome as developed here is remarkable for its multiformity. This patient showed loss of weight, muscular weakness, disturbances of the tactile and other special senses, digestive disorders, sore mouth and tongue with salivation, menstrual disorders, especially periods of amenorrhea, painful conjunctivitis, dry and defective hair, painful urination, tachycardia, loss of appetite, headache, diffuse pain and tenderness, and dermatitis which had been general, but at the time of examination was limited to the face and consisted of a roughening with diffuse brownish pigmentation. All of the symptoms were worse in the winter or early spring. When confronted with such a syndrome, one which is not typical of any well recognized disease, one should always think of chronic arsenic poisoning, and have the urine examined for arsenic by a competent laboratory, or by any one of several tests which are described in detail in textbooks on toxicology or industrial medicine.

2. Putnam, J. J.: Boston Med. and Surg. Jour., 1890, **122**, pp. 421-424.
3. Putnam, J. J.: Boston Med. and Surg. Jour., 1889, **120**, 255.

Increased Importance of Venereal Prophylaxis.—The end of actual fighting in the world war does not lessen the necessity for the campaign against venereal diseases. Rather, it becomes a greater emergency measure than ever. Cessation of hostilities centers attention on the return of the victorious American forces. On entering the service the men became subject to Army and Navy discipline, which, in the control of venereal diseases within the ranks, is rigid. Prior to demobilization the intense fighting morale of the forces is bound to relax. The men will be buoyant in spirit and eager to celebrate. When mustered out they will return to conditions in civilian life which have been responsible for venereal disease. Many of them will contract it as a result. Unless all cases of venereal disease have proper treatment during the period of reconstruction, the scourge will reach alarming proportions. The time from now on is the most critical of all.—*Public Health Reports.*

TREATMENT OF TETANUS

REPORT OF CASE

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LIMÓN, COSTA RICA

History.—N. B., a white man, aged 24, was admitted to the hospital, May 24, 1918, complaining of stiffness in his jaws, but still able to talk. He was a shoemaker, but for the past three months had been working as watchman at one of the railroad stations. The family history was negative. The patient had the usual diseases of childhood, had had gonorrhea twice, and a chancre about a year before. Recently he had been in perfectly good condition until about 3 o'clock on the morning of admission, when he awoke with stiffness of the neck, and had difficulty in opening his mouth. He said: "I have been in such good health that I expected to get married in a week." He did not recall any previous accident. There was no history of any cut or puncture for the past three months. On admission he was not aware of any fever, headache, languor or rigidity of the extremities. The bowel movements were regular, the appetite good, and there was no sore throat.

Physical Examination.—The patient was well developed. The head was negative; there was some rigidity of the neck, and there was slight spasms of the masseters. Although spasms of the jaws had already begun, I was able to remove the man's false teeth, and noticed an erosion in the upper gums, but no signs of local infection. The lungs were negative, but the patient complained of a heavy sensation in the lower part of the chest. The heart rhythm was regular. No enlargement and no murmurs were detected. The abdomen and the upper extremities were negative. In the lower extremities there was some rigidity and exaggeration of the reflexes, and Kernig's sign was present. I was unable to detect any erosion of the skin, except for that already mentioned, in the mouth. From the foregoing data it was clearly seen that no period of incubation could be appreciated in this case. On admission the temperature was 99 F., pulse 86, and respiration 22. The Laboratory reported that the urine was negative. The total white blood count was 8,463, the hemoglobin, 75 per cent.

Treatment and Course.—At the beginning I diagnosed tetanus. I ordered an intramuscular injection of 3,000 units of tetanus antitoxin, and gave 30 grains of potassium bromid every three hours.

I called Dr. A. A. Facio in consultation, and he agreed with me that the case was one of tetanus. He suggested that the tetanus antitoxin be given intravenously instead of intramuscularly, and also that potassium bromid and chloral hydrate, one-half ounce each, be given during the twenty-four hours by the rectal drip method.

In the evening of the day of admission the patient became worse, the rigidity of the neck and lower extremities more pronounced. Risus sardonicus was plainly shown, and the patient called attention especially to sharp lancinating pains at the base of the chest. I gave 5,000 units of the tetanus antitoxin intravenously. About 11:30 p. m., the patient became so distressed that it was necessary to give chloroform inhalations, and with this he rested somewhat. On the morning of the 25th, he presented a typical example of acute tetanus; orthotonus, opisthotonos and convulsive dysphagia were prominent symptoms. An enema was given, and good results were obtained. Intravenous injections of 5,000 units of tetanus antitoxin were repeated every six or eight hours, also the oral and rectal administration of potassium bromid and chloral hydrate.

This treatment was continued until the morning of the 29th, when the condition of the patient became so grave that some change in treatment was indicated. By this time the patient had received 68,000 units of serum antitoxin without having noticed any relief. Tetanus antitoxin, potassium bromid and chloral hydrate were discontinued. I was fearing some lung complication and for this reason also discontinued the chloroform inhalations.

Baccelli's treatment was instituted. This consists in the intradermal injection of a 3 per cent. solution of phenol (carbolic acid) in water, 2 c.c. every three hours. The injections were given on each side of the spinal column, approximating more or less the exit of the nerve trunks. I also gave injections following the course of each sciatic nerve.

During the first ten days of Baccelli's phenol treatment, the intradermal injections were repeated as often as every hour with an average of about fourteen injections a day, that is, seven injections on each side of the spinal column. Later, as improvement began, the injections were given every two or three hours, applied mostly on the lower lumbar regions and along the course of each sciatic nerve.

The convulsive dysphagia and other painful symptoms, due to muscle rigidity, were treated by half a grain of morphin day and night with very good results, to the extent that the patient could have some rest.

I calculated that during the forty-seven days of phenol treatment, the patient was injected with about 450 c.c. of a 3 per cent. phenol solution, which is equivalent to 13.5 c.c. of pure phenol, without detecting any renal complications.

From May 28 to June 14 the patient was fed by rectum, and through the nares by means of a soft rubber catheter.

Besides the milk and other liquid foods, brandy was also given (about 2 ounces in twenty-four hours).

By June 15 the rigidity of the masseter muscles became much less and the patient was able partially to open his mouth. By June 26 he was able to open his mouth well and swallow the liquid food. The convulsive dysphagia was not so severe, but the rigidity of the lower extremities was still quite prominent. I found that the injections of phenol along the course of the sciatic nerves minimized considerably the painful rigidity of the lower extremities.

June 30 I discontinued the morphin and gave instead potassium bromid and chloral hydrate, 15 grains of each every four hours. This dose was now apparently sufficient to counteract nervous irritability.

All signs of muscular rigidity had disappeared by July 9, on which day I discontinued Baccelli's treatment and also the administration of potassium bromid and chloral hydrate. By this date the patient was emaciated, pale, and in a state of stupor, but he did not complain of any pains. Hemoglobin was only 55 per cent. A dose of calomel and magnesium sulphate was given, full diet was resumed, and 1 dram of elixir of ferric pyrophosphate, quinin and strychnin was given three times a day before meals. The patient recovered very rapidly, and was discharged, July 19, apparently in good condition.

The temperature during this time was 98 from May 24 to May 27; between 98 and 101 from May 27 to July 10; on the latter day it reached 103, and from July 11 to July 19 it was normal.

The highest rapidity of pulse and respiration was observed between May 27 and June 12, when the pulse rate was 110 and the respiration 28. It is worth while to notice that improvement began to be more rapid after June 11, when I added to the other treatment 10 grains of hexamethylenamin three times a day, and advised the patient to drink plenty of water. This increased diuresis considerably, and undoubtedly had something to do with a greater dilution and elimination of the tetanus toxin.

COMMENT

From this case we can see once more that the administration of antitetanic serum, once that the toxin has been fixed in the nerve cells, is of doubtful value either in preventing the further development of the disease or in minimizing its severity and duration. During the acuteness of the attack I found morphin superior to potassium bromid and chloral hydrate in relieving the painful muscular rigidity. It makes respiration easy, the patient sleeps better, and the nervous irritability is much decreased.

Baccelli's phenol treatment undoubtedly has an effect in neutralizing some of the tetanus toxin, and possibly

inhibiting the growth of the bacillus. Diuresis, stimulated by the injection of fluids and the administration of hexamethylenamin, is useful because it diminishes the concentration of toxin products by a greater dilution and elimination of them from the body. Of course, the administration of large amounts of fluid to provoke diuresis depends on the condition of the patient's circulation.

METHOD FOR THE ISOLATION AND RAPID IDENTIFICATION OF DYSENTERIC BACILLI*

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Bacillary dysentery is endemic in the United States, and localized epidemics occur from time to time. Our Army and Navy particularly stand in danger from this disease. Of late, confusion has arisen regarding its etiology, as a result of the failure of the isolation of *B. dysenteriae* from the stools of patients. These factors have led us to devise an improved method of isolation and rapid identification of these organisms.

The failure on the part of some workers to isolate the true dysentery bacilli from cases of clinical dysentery is attributable largely to two factors: (1) the improper selection of stool specimens for cultures, and (2) the use of unfavorable culture mediums.

1. *Selection of Stool Specimens for Plating.*—Too much emphasis cannot be laid on the importance of choosing a satisfactory sample of stool. If possible, one containing blood and mucus with little or no fecal matter should be used. It is essential to plate the stool directly or very shortly after it is collected. Experiments with artificial mixtures of the Shiga bacillus with feces showed a 50 per cent. reduction in four hours and from 85 to 90 per cent. in twenty-four hours, when kept at room temperature.

2. *Mediums Used for Plate Cultures.*—Because of the extreme toxicity of dyes for dysentery bacilli, the selective inhibitive mediums used in the isolation of typhoid and paratyphoid bacilli are not applicable here. Consequently the medium most widely used in this country is Endo's, and in England, MacConkey's. The shortcoming of the Endo plate as originally proposed has been realized by workers in this field, and various modifications have been suggested. Kendal, Rettger and Robinson, Kligler and Defandorf successively proposed modifications. The first and last named authors recognized the fact that dysentery bacilli, particularly the Shiga variety, are highly sensitive to alkaline reactions and dyes, and are either partially or wholly inhibited on the original Endo medium, which is distinctly alkaline and contains an excessive amount of the fuchsin indicator.

The Teague and Clurman eosin-methylene blue medium with meat infusion as a base proved entirely unsatisfactory because of its inhibitive effect on Shiga dysentery bacilli. Recently, however, Meyer and Stickel have published comparative data indicating that the eosin-blue medium with veal-agar or pepsin-digest agar as a base gives better results than the Endo as modified by Kendal. The eosin-blue plate cultures show striking colony differentiation and have the added advantage of being at or near the neutral point. Comparative tests were made with various mediums, the results of which are shown in the accompanying table. The strains of the Shiga bacillus used were all isolated last summer and are undoubtedly more sensitive indicators of the favorableness of a given medium than old stock strains. The results indicate clearly that the veal infusion eosin-blue and modified Endo mediums are superior to the phosphate-peptone, the pepsin digest and the old unmodified Endo mediums. This superiority is also demonstrated when one compares the sizes of the colonies on the different plates.

COMPARISON OF RATIO OF B. COLI TO B. DYSENTERIAE COLONIES ON DIFFERENT PLATING MEDIUMS INOCULATED FROM THE SAME MIXTURES*

Medium Used	Flexner Strains						Shiga Strains				Average Size of Colonies in Mm.
	23	24	26	28	31	J	100	109	2X	V. T.	
Veal infusion eosin-methylene blue	3:1	2:1	2.5:1	5:1	Spread	3:1	3:1	2:1	50:0	Crowded	1.5
Veal infusion Endo (Kligler's modification)	3:1	1:1	3:1	1.5:4	Spread	5:1	3:1	Spread	50:1	Crowded	1.75
Veal infusion Endo (old method)	4:1	48:0	7:1	5:1	48:0	35:0	200:1	40:1	200:0	2:1	0.5
Phosphate, eosin-methylene blue (Levine)	2:1	2:1	5:1	3.5:1	2:1	6:1	50:1	4:1	17:1	1:2	1.0
Peptic digest, eosin-methylene blue (Meyer and Stickel)	2:1	1:1	4:1	6:1	2.5:1	5:1	5:1	5:1	30:1	1:5	1.0
Peptic digest, Endo (Kligler's modification)	4:1	1:1.5	7:1	Spread	4:1	3.5:1	2.5:1	2.5:1	30:1	1:2.5	0.8
Peptic digest, Endo (old method)	Spread	1.5:1	7:1	Spread	4:1	....	3:1	6:1	33:1	Spread	1.0

* The figures indicate the ratio of the number of colonies of B. coli to those of B. dysenteriae. The marked inhibitive effect of the Endo medium prepared in the old way, titrating to +0.2 to phenolphthalein, on the Shiga types and the advantage of veal infusion medium are strikingly brought out in this table. "Spread" indicates that count was impossible as a result of confluence of colonies.

Practically, the slight inhibitory effect of the veal infusion eosin-blue medium on Shiga bacilli is overcome by inoculating this type of medium as well as the modified Endo medium[1] with the same specimen.

PROCEDURE

As a result of these tests, and experience in practical work and class work, we recommend the following procedure in the isolation and rapid identification of dysentery bacilli from stools:

A fresh specimen of stool, preferably with blood and mucus, is collected and promptly cultured. A shred of bloody mucus, if present, is selected, washed three or four times

* From the Laboratories of the Rockefeller Institute for Medical Research.

1. The modified Endo's medium is prepared as follows: To veal or beef infusion 1.5 per cent. agar, titrated, and this is important, to *p*H 7.6 to 7.8, is added 1 per cent. lactose and 1 per cent. by volume of decolorized basic fuchsin indicator. The latter is prepared by adding 1 c.c. of 10 per cent. basic fuchsin to 10 c.c. of 10 per cent. sodium bisulphite solution. Of course, the lactose and the indicator are added separately before plates are poured.
The eosin-blue medium is prepared by adding to the veal infusing agar titrated to *p*H 7.2 to 7.4, 1 per cent. lactose and 2 c.c. of a 2 per cent. solution of yellow eosin and 2 c.c. of 0.5 per cent. solution of water-soluble methylene blue.

with sterile saline, to remove all fecal matter, and spread successively on a veal infusion eosin-methylene blue and a modified Endo plate. The plates are then incubated from eighteen to twenty-four hours at 37 C.

The plates are now examined and the suspicious, colorless colonies inoculated into each of two differential tubes:

(*a*) A small tube containing 1 c.c. of a 0.5 per cent. glucose broth.

(*b*) A double sugar tube on the principle of the Russell double sugar medium containing 0.1 per cent. glucose, 0.5 per cent. mannite, and 1 per cent. Andrade indicator.

The colony is picked off with a small loop and inoculated first into the broth and then stabbed in and streaked on the double sugar tube.

After from two to four hours the broth tubes are usually sufficiently turbid for an agglutination test with a polyvalent antidysenteric serum. A faint visible turbidity is sufficient, and when it appears, 0.1 c.c. of a 1:50 dilution of a potent polyvalent antidysenteric serum is added and the tubes reincubated for one hour. A definite clumping is a good presumptive test for the presence of dysentery bacilli.

The double sugar tube is incubated over night. A red butt without gas and colorless slant indicates a Shiga bacillus. If the entire tube is red and gas absent, it corresponds to a Flexner type. The surface growth is now washed off with saline and a confirmatory agglutination test is made with specific type and polyvalent serum. If desired, an agar slant and various sugar mediums may be inoculated for further study, or animal inoculation made.

By the use of the two tubes, one can obtain a presumptive diagnosis about a day after the collection of the stool—a matter of great importance for epidemiologic and therapeutic purposes.

CONCLUSIONS

1. Fresh specimens preferably containing blood and mucus should be cultivated promptly.

2. Mediums for the isolation of dysenteric bacilli should not have a marked alkaline reaction or an excessive amount of inhibitive dyes. Mediums neutral or only slightly alkaline are most suitable. Veal infusion agar is a much more satisfactory base for differential plate cultures for the isolation of dysenteric bacilli than is beef infusion or peptic digest agar. Eosin-methylene blue and modified Endo plates (*p*H 7.6 to 7.8) made with veal agar exert little or no inhibitive effects and permit the colonies to grow to almost twice their size on other mediums. Since the dye medium is apt to be somewhat inhibitive for the Shiga type of dysentery bacillus, it should always be used together with a modified Endo plate.

3. The method given permits a presumptive and confirmatory diagnosis of bacillary dysentery in a very short time.

Regulating the Distribution of Quinin.—The Brazilian government has promulgated regulations for the purchase and sale of quinin for use in overcoming destructive endemias in the rural sections. The drug will be purchased either in foreign or domestic markets in the shape of salts of quinin, and cinchona bark will also be imported and extracted in the Oswaldo Cruz Institute. When prepared the quinin will be sold in tubes officially sealed with a government stamp and marked with a label indicating the quantity, quality and official price. The tubes will be furnished to pharmacies and to other distributors, especially throughout the malarial sections of the country, with the requirement that they shall not be sold at a profit exceeding 10 per cent., under penalty of fine for violation of the price regulation. According to *Commerce Reports*, from which this information is obtained, the federal railways will be furnished the official quinin and will distribute it without cost to employees. Other industries may purchase it for free distribution at a rebate of 10 or 20 per cent.

THE EFFECT OF "GROUND GLASS" ON THE GASTRO-INTESTINAL TRACT OF DOGS

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During the past few months quite a number of food specimens have been received at the Southern Department Laboratory, Fort Sam Houston, Texas, with requests for examination to determine the presence of "ground glass."

Of 120 specimens of different kinds, glass was found in the following samples: cakes, 2; cottonseed hulls, 5; jelly, 1; milk, 1; prepared mustard, 1; peanut butter, 1; sliced beef, 1, and sugar, 1.

The glass found in many of these specimens was small in size and amount, and could have been accidental. Some few samples of food in closed non-sealed containers, however, showed many large pieces of broken glass, which, apparently, had been placed there purposely by those sending in the specimens.

Many reports of so-called "glass poisoning" were made by newspapers and individuals, and the subject was discussed in a number of medical journals throughout the country, but we have not been able to obtain positive data concerning a single authentic case of illness due to the ingestion of glass in any form or size. A partial review of the literature gave no definite information.

FEEDING EXPERIMENTS

In an attempt to determine what lesions, if any, are produced by glass in the gastro-intestinal tract, feeding experiments were carried out on dogs.

Dogs.—Ten young dogs obtained from the city pound of San Antonio, Texas, were placed in separate cages, numbered, and fed on scraps from the hospital mess. Records were made of the general appearance, weight, temperature (by rectum), blood count and feces examination (both gross and microscopic) for blood, pus, epithelium, etc. All these records, with the exception of blood counts, were made daily, until the completion of the experiments, when the animals were chloroformed and examined postmortem.

Glass.—Broken Petri dishes and test tubes were ground in a large stone mortar, after which the glass was divided into five sizes by passing through sieves of different mesh. The different grades of glass used ranged from Grade 1, which was designated "large broken," to Grade 5, called "fine powdered." A large amount of each grade was prepared and bottled.

Dosage.—The ten animals were divided into two series of five each. Dogs of Series 1 received 1 gm. of the grade of glass corresponding to the cage number, while Series 2 (Dogs 6 to 10) received 5 gm. doses in the same order. Thus, Dogs 1 and 6 received Grade 1 glass, but Dog 6 received 5 gm., while Dog 1 was only given 1 gm. doses.

Each dose of glass was mixed in a mortar with about 200 gm. of lean meat and immediately fed to the dog. All grades, except Grade 5, were easily detected in the food with the naked eye. The first two doses were given at four-day intervals, but after

that they were repeated daily until the animals were chloroformed. (The second dose in each case, owing to a mistake, was of different grade glass.)

Weights.—The original weight was accepted in each case as normal, and the fluctuations that were recorded represent merely loss or gain in pounds.

The weight curve in each case showed fluctuations, and in five of the dogs there was a slight loss of weight as shown on the day of necropsy, averaging about one-half pound. Two of the dogs showed marked gain in weight, and in three the initial and final weights were identical.

Temperature.—These records by rectum showed nothing remarkable except in Dog 5, which had a temperature of 104 F. on two occasions: May 21, twenty-four hours after receiving the first dose of glass, and May 24, when the second dose of glass was given. The rise in temperature was probably due to some other cause, as it was only temporary and as Dog 10, which received five times as much of the same grade of glass, was not similarly affected.

FLUCTUATIONS IN WEIGHT

Number of Animal	Weight Gained	Weight Lost
1	.....	½ pound
2	.....	½ pound
3	None	None
4	3 pounds	
5	None	None
6	.....	½ pound
7	.....	1 pound
8	.....	½ pound
9	1 pound	
10	None	None

Number of animals that gained weight	2
Number of animals that lost weight	5
	Pounds
Average weight gained	6
Average weight lost	6

Feces.—All daily examinations were negative for blood and pus. Dog 5 showed a slight temporary diarrhea with some mucus at the time of the rise in temperature, after which the stools were negative. Practically all the dogs were infected with *Uncinaria* and *Taenia.*

Necropsy Findings.—The dogs were killed with chloroform and immediately examined. The postmortem findings were remarkably uniform in the absence of any visible lesions. As the findings were so similar, detailed account of each will be omitted and one protocol given:

The peritoneal surfaces are smooth and glistening and there is not any excess of fluid in the peritoneal cavity. The omentum contains much fat. The intestines are not distended. The lymphatics are engorged and beautifully marked out so that they are easily traced from the intestine through the mesentery to the glands. The stomach contains a large amount of undigested food in which particles of glass are readily discernible. The gastric mucosa is gray and translucent. There is no ulceration nor any evidence of hemorrhage. The intestine contains a moderate amount of digested food in the upper half. The intestinal mucosa is gray and translucent, and there is no ulceration, hemorrhage or exudate present. There are several taeniae and many uncinariae present in the lower portion of the bowel. The lungs, heart, spleen, pancreas and liver are negative.

The postmortem findings in the control dogs were identical, except for the absence of glass.

For the microscopic preparations from six to twelve segments of the intestine from different portions were removed before the bowel was opened. This was done to avoid the possibility of any trauma to the mucosa while opening the bowel. These segments measured from 5 to 10 mm. in length. The stomachs were opened before the specimens for microscopic examination were removed. The tissue for examination was immediately placed in 10 per cent. solution of formaldehyd. The paraffin method was used in the preparation of the material for sectioning.

The findings microscopically were equally negative. The sections from the stomach of each of the dogs and from the control dogs did not show any abnormal changes. The epithelium was intact and there was not seen any infiltration with leukocytes or small round cells of the mucosa, submucosa or muscular layers in some of the sections. From the intestines of four of the dogs (3, 4, 6 and 7) there was seen some denudation of the tips of some of the villi of their epithelium. There was not, however, any exudate on the surface of the villi, or any inflammatory reaction within them. No other abnormal changes could be found in any of the sections. The central lacteals and lymphatics were engorged in those dogs that were examined during the period of active digestion. The gross and microscopic findings were identical on the dog that was given one large dose of glass (50 gm.) and examined postmortem forty-eight hours later.

In both of the control dogs, denudation of the tips of some of the villi of their epithelial cells was observed.

CONCLUSION

The ingestion of ground or powdered glass has no toxic effect and produces no lesion, either gross or microscopic, on the gastro-intestinal tract of dogs.

OBSERVATIONS ON AN EPIDEMIC OF BRONCHOPNEUMONIA IN OMAHA*

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Late in September and in the early days of October, a respiratory affection corresponding somewhat closely to the descriptions given of "Spanish influenza" appeared in Omaha. October 3 and 4, a large number of people congregated in the theaters, stores and streets, incident to the civic parades and other functions of the Aksarben festival, which yearly brings huge crowds to Omaha. October 5 and 6, the disease attained the proportions of an epidemic. We also have information that a considerable number of cases appeared among the troops in Fort Omaha on the second day following the Aksarben. The morbidity curve showing the influence of "crowds" on the outbreak of the epidemic is significant (Chart 1).

THE NATURE OF THE EPIDEMIC

Clinically, the disease was characterized by a more or less sudden onset, usually without definite prodromes. Headache, generally severe, was almost constant and commonly associated with backache, boneache and general malaise. Cough, which was slightly productive or nonproductive in the beginning, was always present. The sputum was not tenacious but mucoid. Its color varied from a slight, diffuse, bloody

* This investigation was made by the University of Nebraska and Creighton Medical colleges at the instigation of the Omaha Department of Public Health.

discoloration to a deep bloody red. The sputum never took on a typical rusty appearance. Toward the end of the disease a suggestion of rustiness was occasionally present. Cyanosis was uniformly present and was disproportionate in degree to the severity of the disease except in the moribund. The temperature curve was either of the remittent or the continuous type. Reverse types were common. Drops of lysis predominated (83 per cent). Considering the severity of the symptoms, the pulse was slow except in the moribund. Death seemed rather of a respiratory than

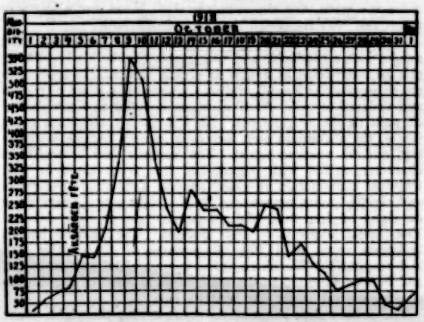

Chart 1.—Morbidity curve showing the influence of "crowds" on the outbreak of influenza.

of a cardiac type. Delirium was usually absent. Gastro-intestinal symptoms were common (50 per cent). Herpes was rare. The most constant feature was the presence of findings pointing definitely to pulmonary involvement. The lungs of all the patients under observation were examined at least once a day, and whenever any change in the pulse-temperature curve or in the clinical course occurred. In no instance was a typical "flu" case of any considerable duration observed that did not at some stage of the disease reveal lung findings, such as signs of increased density to palpation and percussion, altered breath sounds, or localized moisture evidenced by fine or small moist râles. Lung findings diagnostic of bronchopneumonia were absent in only 18 per cent. of the hospital admissions. The latter cases were in all instances mild, being of from one to three days' duration. Pleurisy was exceptional, although pains in the chest were common. Although the observations were made largely in hospital cases, and although it might be argued that only the severe cases would gravitate to the hospitals, yet whenever accurate clinical observations were made, they supported the assumption that we were dealing with an *epidemic of bronchopneumonia*.

Two hundred consecutive leukocyte counts averaged 11,950 cells with 72 per cent. polymorphonuclears. The leukocyte count seemed at times to have prognostic worth. Low leukocyte counts occurred most commonly in the severer cases. Rises in the leukocyte count often presaged improvement, and sharp drops in the count were ominous. Chart 2 illustrates a typical leukocyte curve in a fatal case.

An interesting fact was the relative infrequency in the disease history of the patients of antecedent respiratory infections, as bronchitis, tuberculosis, catarrh, nasal disease, diphtheria, pneumonia or pleurisy. This is suggestive of a degree of active immunity in individuals who have previously suffered from respiratory disease. Fatalities were most common among the robust. The average age of our patients was 23.5 years.

ETIOLOGY

Bacteriologic studies were carried out on material derived from sputum, blood cultures, necropsies and pleuritic exudates. Smears and cultures constantly revealed a diplococcus resembling in many ways the pneumococcus, but giving atypical cultural reactions. The organism was gram-positive, with a tendency to short chain formation. Capsules could not be definitely demonstrated with the usual capsule stains, but a suggestive halo was frequently encountered. The growth of the organism on ordinary culture mediums was exceedingly difficult, and even on special mediums the growth was decidedly delicate. Litmus milk containing blood and blood agar proved most satisfactory. Many strains refused to grow beyond several transfers. The original cultures coagulated milk in forty-eight hours, which reaction often failed to occur after several transfers, the organism frequently dying out even when transferred every three to four days on blood mediums. Bile solubility was variable (positive in 40 per cent). Inulin and litmus milk were usually acidified and coagulated. Mice were decidedly susceptible, and died in from twelve to eighteen hours after intraperitoneal inoculation, and the organism was constantly recovered from the heart's blood. The virulence of the organism diminished rapidly when grown on artificial mediums, and several transfers usually sufficed to render it avirulent. Only a limited number of strains have been typed, but the majority of these have failed to agglutinate.

Every effort was made to recover other types of organisms, especially the Pfeiffer bacillus, but without success. Anaerobic and varying oxygen tension cultures after Rosenow's method were made as a routine. It is of interest to note that positive blood cultures were obtained as a rule only at the height of the disease, and then only in the moderately severe or in the severe cases. This is suggestive of a descending respiratory rather than a hematogenic mode of infection.

All the necropsies thus far made have shown a bronchopneumonia of a hemorrhagic type except in one instance in which the pneumonia was of the typical lobar form, and the organism isolated from the blood culture and at the necropsy proved to belong to the Type II pneumococcus. It was noted clinically that this case was probably an ordinary pneumonia and was not of the prevailing epidemic.

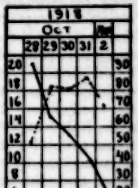

Chart 2. — Typical leukocyte curve in a fatal case of bronchopneumonia. The column at the left gives the number of leukocytes in thousands, and is represented by the solid line; the column at the right, the percentage of polymorphonuclears, and is represented by the broken line.

CONCLUSIONS

1. The clinical and laboratory observations made to date go far to support the assumption that we are dealing in Omaha with an epidemic of atypical bronchopneumonia. It would be reasonable to assume that in mild cases which do not develop demonstrable lung disease (and from our experience they must be rela-

tively few) there is a partial active immunity which accomplishes an early abortion of the disease, or that the infecting organism was avirulent. We consider bronchopneumonia the one characteristic clinical and pathologic finding in our epidemic (82 per cent.) In other words, *the so-called complication is the disease.*

2. Bacteriologic examinations thus far made reveal an organism which seems best classified as an atypical pneumococcus and which we consider to be the probable cause of the epidemic.

Further clinical, bacteriologic and immunologic studies are under way.

808 Brandeis Theater Building.

PHLEGMONOUS GASTRITIS

REPORT OF CASE

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Phlegmonous or submucous gastritis is a rare condition. It was first described by Benel in 1656. In 1904, Robson and Moynihan collected eighty-five instances, and up to the present about 100 cases in all have been reported.

The condition is an acute suppurative inflammation affecting oftenest the submucous coat of the stomach, and extending to the muscular and serous coats more frequently than to the mucous. It is sometimes primary, but usually secondary, occurring in the course of such diseases as typhoid, scarlet fever, smallpox or puerperal septicemia. Two forms have been described, a diffuse and a circumscribed.

The etiology is not definitely known. Of the several theories that have been advanced, the bacterial seems to be the most plausible. Streptococci are the commonest micro-organisms present; colon bacilli have been occasionally demonstrated. In the case here reported, streptococci were demonstrated in the stomach wall by the Gram-Weigert stain. In secondary cases it is probable that the infection is carried by the blood stream. It is held by some that the invading organisms enter through traumatic or other lesions in the epithelium. Symmers, at Bellevue Hospital, however, failed to produce the lesion in animals by feeding them ground glass and inoculating streptococci and pneumococci by way of the blood stream or stomach tube, and the association of phlegmonous gastritis with such lesions as ulcer and cancer is almost unkown. The pyloric region of the stomach seems to be the site of predilection, although the process may involve the entire stomach.

The onset is sudden with symptoms of intense gastric irritability and profound general disturbances. The issue is rapidly fatal. Sometimes the symptoms of general peritonitis, as in the case here reported, are superimposed, and it is probable that many cases are similarly obscured and thus wrongly diagnosed.

Pain, epigastric tenderness, nausea, vomiting, chills, fever and hiccup are the outstanding symptoms. Hiccup was marked in the present case.

The course is usually from one to seven days.

The diagnosis during life is at best a guess. Chvostek is said to have succeeded in making one such diagnosis.

REPORT OF CASE

History.—C. W., man, aged 29, married, colored, laborer, American, applied for treatment at the dispensary, Dec. 19, 1917, complaining of a vague abdominal pain, general in character, intermittent in type, increasing usually after meals, but never severe enough to confine him to bed or to interfere with his appetite. The patient was constipated. There was no history of vomiting, gaseous or sour eructations, or jaundice. Physical examination revealed a slight abdominal tenderness, more marked on the right side, but no masses and no rigidity. Over the aortic area there was a faint systolic murmur transmitted to the carotids, but no other signs of cardiac trouble. The patient was advised to enter the ward for observation, but refused.

December 26, he returned to the dispensary, complaining of the same vague abdominal pain. He was again advised to enter the ward, and the withdrawal of blood for a Wassermann test was suggested, but he refused both.

Present Illness.—On the morning of Jan. 19, 1917, the patient awoke with a headache, and was unable to take his breakfast; this he interpreted as a sign of severe illness. He applied to the dispensary at 9 a. m., and was given half a grain of codein and ordered to bed. At 10 a. m. he vomited and complained of pain in the epigastrium. At 4 p. m. his condition grew worse, the abdominal pain increased, nausea became distressing, and he vomited again. The vomitus was brownish in character, mixed with mucus, but free from blood or pus. Physical examination revealed general abdominal tenderness and rigidity, more pronounced on the right side. There were no signs of free fluid and no obliteration of liver dulness. The facial expression was anxious. The patient had a leukocyte count of 15,000, temperature of 101.6, pulse 100, and respirations 22. A ruptured gastric ulcer was suspected and he was admitted to the male surgical ward of the Englewood Hospital under the writer's care.

The patient slept about seven hours during the night. Next morning he repeatedly vomited green fluid. At 8 a. m. he had a leukocyte count of 27,400; polymorphonuclear neutrophils, 92 per cent.; lymphocytes, 8 per cent.; temperature, 103.2; pulse, 108, and respirations, 24.

He was operated on at 11:30 a. m., by Drs. Bradner and Pitkin. About 2 ounces of serosanguineous fluid were found in the peritoneal cavity. No definite perforation was located. A posterior gastro-enterostomy was impossible on account of excessive thickening of the stomach wall. A gastrostomy was performed, and it was noted that the stomach wall had lost its elasticity and had become so indurated that it was difficult to suture it to the gastrostomy tube. Two cigaret drains were inserted into the peritoneal cavity, and the patient was returned to bed. His general condition was fair, pulse 116, respiration 24. The rectal drip was employed and pituitary solution given.

About 11 p. m. the patient became very restless and thirsty, and complained of pain in the operative area. He also had a hiccup and there was a bloody discharge on his dressing. An irrigation with warm saline through the gastrostomy tube was performed; the return was at first bloody but later became clear. The temperature was up to 104.4, pulse 128, respirations 26. He slept about four hours subsequently.

Next morning, nutritive enemas were started.

In the drainage bottle to which the gastrostomy tube was connected there were 16 ounces of wine colored fluid.

About 8 a. m. the patient's temperature went down to 102, and his pulse to 118, but his respirations were accelerated to 32. At 3 p. m. the abdomen was distended and tympanitic, but there was no evidence of free fluid. He was given an alum enema with good result.

His general condition grew worse, his pulse rose to 138, and became thready, he was given stimulation but did not respond, and he died at 7:50 p. m.

Necropsy.—This was limited to the abdomen. There was about 1 quart of bloody fluid in the general peritoneal cavity. The fluid had apparently oozed through numerous minute perforations in the stomach.

The stomach wall was greatly thickened, measuring from a third to half an inch, and on compression, gastric contents oozed through several pin-point perforations. These perforations were clearly demonstrated by opening the stomach and holding it up against the light. The gastric mucosa looked and

felt leathery and smooth, the rugae having been obliterated. The process was diffuse.

The intestine was distended, and the intestinal wall was slightly congested. The mucous membrane was normal. The mesenteric nodes were enlarged.

The liver was pale and opaque; its substance was soft and mushy, reminding one of the liver in cases of acute yellow atrophy. The splenic tissue appeared normal except for a slight congestion.

The remaining organs were negative.

Numerous microscopic sections of the stomach were prepared in the pathologic laboratories at Bellevue Hospital. They were examined by Dr. Symmers, who found that the mucosa of the stomach was normal except for a superficial necrotic layer. The entire stomach wall beneath the muscularis mucosae was richly infiltrated by polymorphonuclear leukocytes, and was markedly edematous. The blood vessels of this portion of the stomach were deeply injected. Gram-Weigert preparations revealed the presence of innumerable streptococci lying chiefly in the stomach wall immediately under the muscularis mucosae. Microscopic sections from the intestinal tract revealed no pathologic changes.

27 Schermerhorn Street.

THE INCIDENCE OF TYPHOID CARRIERS IN A STATE INSANE ASYLUM*

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In September and October, 1907, the Brooklyn State Hospital had some cases of typhoid fever. At this time, Drs. Smith and Agnew of this institution sent to Miss W. Carey Noble, of the Bureau of Laboratories, the stools of all the convalescent patients; continued examinations showed that two women (E. O. and A. M.) had become chronic bacillus carriers. In 1912, there were a few cases of typhoid fever, and from these developed another chronic carrier (M. R.). Again, in 1915, a few inmates contracted the disease.

As previous reports have shown the tendency to a high carrier rate in asylums, we thought it worth while because of this history of institutional fever, to cooperate in a survey to determine the incidence of typhoid carriers. Under the direction of one of us, the institution was listed by wards, and ward residence since 1907 indicated for each inmate. Our intention was to include only the resident population at the time these lists were compiled. Specimens of feces were collected and brought to the laboratory as soon as possible after evacuation, and were there examined for the *Bacillus typhosus*. All the inmates in the female wards have been examined, yielding the following results:

Wards 1 and 2, population (February, 1916), 91: No cases of typhoid developed in this ward. One resident had typhoid in Ward 9 in 1907. No carriers were found.

Wards 3 and 4, population (March, 1916), 65: There were two cases of typhoid in this ward in 1907, and both the patients became carriers (E. O. and A. M.). Two additional carriers (M. C. and H. G.) were found, both without a history of typhoid. M. R., a chronic carrier, who developed typhoid in Ward 9 in 1912, was transferred to this ward later in the same year, and died here in September, 1915.

Ward 5, population (April, 1916), 80: One case of typhoid developed in 1907. Another patient had typhoid in Ward 9 in 1912. No carriers were found.

Ward 6, population (April, 1916), 132: No cases of typhoid developed in this ward. No carriers were found.

Ward 8, population (April, 1916), 72: No cases of typhoid developed in this ward. Three residents gave histories of typhoid, two before admission to the hospital, one in 1907 in Ward 9. Examinations were negative. Two carriers (J. M. and M. W.) were found, both without a history of typhoid. M. W. died in February, 1916. The changes in ward residence of these carriers and of other carriers, then unrecognized, may have led to contact infection and the development of the carrier state, without recognizable symptoms of typhoid infection.

Ward 9, population (May, 1916), 76: Eight cases of typhoid have developed in this ward: two in 1907, four in 1912, and two in 1915. (Three of these persons are now residents in other wards, and noted there.) One 1912 patient (M. R.) became a chronic carrier and was transferred to Ward 3 (which see). Examinations of the four residents were negative. One typhoid carrier was found (M. B.) who denies a history of typhoid fever.

It will be seen from this summary that, in a total population of 516 female patients, the survey yielded five chronic carriers, in addition to three previously known. Of the last, all continued to excrete bacilli after having had typhoid fever, two in 1907 and one in 1912. Of the other five, none gives a history of typhoid fever. Too much reliance cannot be placed on negative histories of typhoid fever, especially from patients of this type, as the symptoms of a mild infection may have been overlooked.

In spite of this, however, we believe that it is not an unreasonable assumption that some of these patients coming in contact with cases or carriers ingested the bacilli, became normal or contact carriers, and later developed into chronic carriers. That is, their natural immunity prevented the development of a generalized disease; but in spite of this resistance, the bacilli multiplying in the intestine, small numbers may have invaded the body proper and through the lymphatic and vascular systems may have reached the liver and gallbladder, where they localized and gave rise to chronic inflammation. After their localization in the biliary passages, a chronic carrier state would be likely to result.

The striking thing in this investigation is the large number of carriers, eight among 516 persons, or 15.5 per thousand. This rate is higher than usually encountered in institutions and much higher than among the general population. The unusually high incidence is shown by applying the rate to the female population of New York State over 25 years of age. This would give the extraordinary result of 45,000 carriers.

In view of these results as well as because of the frequency of institutional typhoid fever, we do not believe that any one would question the advisability of vaccination of all inmates of insane asylums. Unfortunately, however, this procedure is left to the discretion of the institutional authorities and is not carried out as generally as it should be.

A considerable amount of institutional typhoid fever due to the failure to vaccinate has come to our notice during the last few years. Because of this, we feel that vaccination should be mandatory not only in asylums but also in all custodial institutions, and a regulation to this effect should be added to the sanitary codes of all health departments.

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Military Medicine and Surgery

THE EFFORT SYNDROME

TOGETHER WITH A CONSIDERATION OF THE SIGNIFICANCE OF CERTAIN MURMURS *

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The war has altered opinion of the value of many signs formerly accepted as important indications of the presence of organic heart disease. The chief sign involved in the changed point of view is the systolic murmur. The significance attached to diastolic murmurs, both the diastolic murmur of aortic insufficiency and the presystolic murmur (auriculo-systolic) of mitral stenosis, has remained unaltered. Persons affected with these two diseases have been found not to bear the strain of war satisfactorily, even if at the time of enlistment they were free of any indication of heart failure. They are now, accordingly, rejected for service.

The significance of systolic murmurs, especially their relation to mitral insufficiency, however, has occasioned much discussion. Systolic murmurs occur in so large a number of persons that it has become necessary to decide when they are important and denote mitral insufficiency. The need for making the distinction between important and unimportant systolic murmurs occurred infrequently in civil life. Young men rarely sought medical advice on account of such murmurs. When they did, as the result of life insurance or other accidental examination, the difficulty in diagnosis was appreciated, but reliable guides for making a decision were wanting. Early in the war, men with such murmurs were accepted, and many were found after severe service to bear satisfactorily the fatigue incident to campaigning. The conclusion was therefore drawn that the murmur in itself must in these instances be considered unimportant. New criteria were accordingly required to decide which systolic murmurs were important and which types were not.

CLASSIFICATION OF SYSTOLIC MURMURS

Until now, it has been customary to divide murmurs into two groups, functional and organic. To decide in which group a murmur belonged, it was studied from the point of view of the bearing on it of the posture of the body, of the position in the precordial area at which the murmur was best heard, of its character on auscultation, according to its intensity in different respiratory phases, according to the direction of its transmission, and according to its time incidence in the cardiac cycle.

A word should first be said on the use of the words "functional" and "organic" in relation to murmurs. A murmur is, of course, a physical phenomenon and is dependent on the structure of the containing vessels and the arrangement of the surrounding tissues for its production and character. This is true of the so-called functional murmur as well as of the organic variety. All murmurs are in this sense organic. The distinction that the words "functional" and "organic" were intended to convey relates to their importance or unimportance, or perhaps better to their significance or insignificance. The point is in itself not important except in the interest of clear understanding.

Close study has failed to show that systolic murmurs may be classified as significant or insignificant according to the criteria just enumerated, that is to say, posture, position, character, respiratory emphasis, transmission, and position in the cardiac cycle. It is, of course, true that aid may be obtained from certain of these criteria; but the aid is not definitive. Other criteria have therefore been proposed. These relate (1) to the size of the heart; (2) to the history of infection, especially of rheumatism; (3) to the intensity of the second sound in the second left interspace or third left costochondral junction, and (4) to the reaction to exertion. A candidate may be accepted for service in the Army if his heart is normal in size, if there has been no history of rheumatism, if the second cardiac sound is not accentuated, and if the response to a standard exercise test is normal, even though a systolic murmur is present. The terms used require explanation.

The heart is normal in size in adult males in civil life in the third decade, when in the oblique position it measures from 9 to 11 cm. In active military service the size often increases to from 11 to 13 cm., and these dimensions are considered normal. The measurements given are based on roentgenograms placed when exposed 2 meters from the target of the roentgen-ray tube. Attention must be called in this connection to the fact that not all normal hearts lie in this oblique position in the chest. Frequently their outline shows them to have a more vertical position in the mid-thoracic region. Sometimes they have a more nearly transverse position. These variations naturally make the diagnosis of hypertrophy difficult and must be taken into consideration in deciding on its presence. A hypertrophied vertical heart may in profile be smaller than a normal transverse organ. In every instance, therefore, a correct estimate of size may not be possible.

The second criterion mentioned is the history of infection, and especially rheumatism. Under rheumatism are included acute rheumatic fever, chorea, torticollis, tonsillitis and growing pains. It is obvious that a single attack of acute rheumatic fever occurring in childhood, and being followed by no obvious cardiac disability, is not as important as repeated attacks, the last of which has occurred within the year.

The third criterion relates to the intensity of the second sound. It is not possible to state that the second sound is invariably accentuated when chronic mitral endocarditis has persisted for a prolonged period, but it is believed to be the rule that after long-standing disease an accentuation takes place. Its presence is therefore of significance in deciding that disqualifying disease has occurred.

The nature of the response to a standard exercise test is the fourth criterion. The introduction of the test is important, for it gives information of what one desires to know as the result of examination, that is to say, the ability to undergo exertion. The test recommended in Circular 21, of the Surgeon-General's Office, consists in hopping 100 times on the left foot so that the shoulder is elevated from 4 to 6 inches. Two minutes after the end of this exercise, the ventricular rate should return to approximately within ten beats of normal and the blood pressure to normal. The

* Lecture delivered at the Army Sanitary School, A. E. F., April 29, 1918.

measurements are made with the patient in a recumbent position. The test is recommended because it is simple and can be carried out in a uniform manner.

It is not pretended that one can rely on these criteria always to solve a difficulty in diagnosis when a systolic murmur is present. But they are useful when, in addition to the murmur, the heart is barely enlarged and a history of repeated and recent attacks of rheumatic fever is reported.

A word should be said about the character of the apex impulse. It has been the habit to lay stress on its extent and position and on the force or other slight abnormalities presented by it on palpitation. Recently abundant experience has tended to confirm the impression that too much stress is laid on these phenomena. But as an indication of the position of the left border of the area of cardiac dulness, in estimating hypertrophy, the location of the apex, especially its farthermost extension to the left, is valuable.

EFFORT SYNDROME

These views as to the systolic murmur represent the chief alteration that has been made in the point of view of organic heart disease. Of far greater importance is a syndrome, functional in nature and, although not confined to soldiers, especially common in war. It is a group of symptoms, referred by soldiers to the cardiovascular system, and forming a frequent cause of more or less serious disability. This group of symptoms was first described as a clinical entity during the Civil War in the United States by Hartshorne, and the description was later elaborated in greater detail by DaCosta. By the latter it was called the "irritable heart of soldiers," and the disorder was known by this name until the present war.

The reason for its occurrence was sought in our own and other armies. Its cause was laid first to one and then to another circumstance. It was found everywhere and under all conditions. During the present war, attention was forcibly directed to the affection because of the large numbers of soldiers whom it involved. With the new work on the subject, the name of Thomas Lewis is closely connected. His recommendation that the affection be known by the term "effort syndrome" has fortunately been accepted in the American Expeditionary Forces. It is classed in the British service as disordered action of the heart (D. A. H.).

The affection is characterized principally by the occurrence of breathlessness, giddiness, a sense of fatigue, pain in the chest, often in the region of the precordium, and palpitation. On examination are found, in addition, an anxious facies, tremor or shakiness of the fingers alone or of the extremities or even of the whole trunk, cyanosis, sweating, skin hypersensitiveness, both hyperesthesia and hypesthesia (Head zones), and tachycardia; and on questioning, one learns besides of headache and of unpleasant dreams at night. Many of the symptoms suggest the presence of the heart failure of chronic valvular disease. It will be seen, however, that this affection is strikingly different. It need scarcely be pointed out that the two conditions may coexist.

Naturally, not all these symptoms are necessarily present in the same patients, and besides the individual symptoms vary in the degree of severity. Indeed, the clinical picture varies within wide limits. In consequence, experience is required in order to recognize the cases, especially in the milder forms. Patients may, in fact, complain of a single symptom only. The most frequent of them, according to Hume, is pain in the chest, occurring in 768 out of 1,000 cases. Breathlessness comes next (675), then giddiness (403), palpitation (354), precordial tenderness (268), fainting with loss of consciousness (98), and fainting without loss of consciousness (25). As a matter of fact, it happens frequently that a single one of these complaints causes the soldier to report at sick call. But in addition to his complaint, if we suppose it to be precordial pain, he is likely to look worried, his face to look drawn, his brow contracted, his eyes unduly anxious, his hands and fingers ashake. Questioning may elicit the fact that he suffers from headache, bad dreams at night, pain of a fugitive nature elsewhere in the body, and an increasing disability to work. Examination discloses the presence of certain physical signs, to be discussed later. While the clinical picture that has just been drawn is common, the especial cause for sick report may be one of the other chief symptoms.

Indeed, any one of the chief complaints enumerated may appear alone and dominate the clinical picture. Experience must teach the large variety of combinations in which the chief symptoms occur. The peculiarities they present deserve detailed consideration.

The pain is usually located in the precordium or just above and to the left of it. Its position is not necessarily fixed; it may change from day to day. It may be felt on the right side of the chest, in the flanks or elsewhere. Sometimes, though, it is referred to the shoulders and arms. When the pain is in the chest, its character is usually sharp, sticking and fleeting, rarely constricting. It is probably not experienced at night and it does not keep the patient awake. Effort tends to bring it on, just as it tends to bring on the other symptoms. Associated with the pain, areas of skin hyperesthesia (Head zones) are found in from a quarter to one half of the cases. The intensity of this symptom varies. Patients may complain of it as due to the pressure of clothing. In other instances, its presence is elicited on examination. Pressure between the fingers of the pectoral, deltoid and sternomastoid muscles may elicit unilateral or bilateral tenderness. Boas[1] has in a similar manner found areas of hyperesthesia. The frequency with which this occurs is not known.

Breathlessness is likewise a common complaint and often the sole one. It interferes altogether with the normal performance of duty, such as a route march. It may be impossible objectively to detect the symptom, but not infrequently the distress is obvious. The rate of the respiration may be much elevated, especially as the result of effort. Frequencies of 60 and 80 per minute have been described. The relief from effort and the recumbent position are usually followed by the return of breathing to normal. But dyspnea, even when the degree is very striking, does not require the patient to be propped up in the way that heart disease does. Patients sleep quite flat or on one pillow, and the rate of breathing is normal. Cough and expectoration are not prominent.

There is, however, one type of case in which difficult breathing comes on, especially at night, in the form of attacks of nocturnal asthma. Such attacks are probably limited to those cases of the effort syn-

1. Boas: Personal communication to the author.

drome in which the patients have in addition been gassed. They are manifestations of gas poisoning rather than of the effort syndrome. They come on rather late (in from four to six weeks) after the gas attack. It is a form of respiratory distress that requires special mention under treatment.

In connection with breathlessness are often combined the sensations of extreme fatigue or lassitude and giddiness. The sense of fatigue alone may be so great as to be incapacitating. Walking on a level for 100 yards may suffice to engage all the patient's effort. Carrying light equipment, or using a shovel or rake may be quite beyond his strength. Muscular tone may be low. The patient is then unable to resist the examiner's effort to extend the arm when he has previously been directed to hold it flexed. The muscular weakness may, indeed, be general.

Giddiness is a very common complaint. It is a type in which objects external to the patient apparently do not tend to circulate about him. It is expressed rather as a desire on his part to steady himself against the impulse to fall. Black spots and other abnormal visual phenomena, common in the vertigo of hypersensitive circulatory diseases or in chronic nephritis, are not prominent complaints.

Attacks of fainting occur in a moderate number of men. Sometimes consciousness is retained, but more often it is lost. Care must be taken in distinguishing this condition from true epilepsy.

Cardiac palpitation is a common symptom. It may accompany elevation of the pulse rate, but it need not do so. It may persist during rest.

Examination of the patient brings out a number of signs in addition to those to which the patient has attracted attention. Prominent among these are tremor, sweating and tachycardia. The tremor is coarse and is a shake rather than a tremor. It involves not only the fingers and hands but occasionally all the extremities and the head and the entire trunk as well. Patients who have it in a marked degree, and have the anxious facies as well, present a distressing picture. But the importance of the tremor, striking sign that it is, is easily exaggerated. Examples of it are widely distributed. It may occur in men who give no evidence of suffering from the effort syndrome. It is found, in fact, in great numbers of men who have never been away from a base port. On the other hand, it is entirely absent in equally large numbers of men who have served fairly long periods in the trenches and have sustained wounds. When it is associated with the effort syndrome, its prominence overshadows the picture; but in spite of that, it has not for the reasons given been found valuable as a guide in diagnosis or as an index of progress in treatment.

Profuse sweating is common, even when the weather forms no adequate reason for it. Sweat may stand on the face and drop from the axillae. There are other evidence of hyperactivity of the skin, such as the occurrence of wheals on stroking. The occurrence of Head zones, both of hyperesthesia and hypesthesia, has already been mentioned.

Of especial interest is the examination of the heart, to which most of the symptoms, such as pain, breathlessness, tachycardia, and fatigue, are naturally referred. The pulsation of the precordium is often striking, and may extend as a wavelike motion over two or three intercostal spaces. The thrust forward of the apex impulse may be especially forcible; in fact, it is often felt to be so. A thrill is not felt, but very frequently the impulse is not the simple, single thrust normally experienced, but rather is split, giving the impression of a major thrust split into a succession of ill defined minor parts. One is reminded of the thrill in presystole of mitral stenosis. But the thrill in mitral stenosis differs distinctly from this, especially in the matter of its timing. This thrill, due no doubt to overaction, occurs distinctly in systole, at the time of the first sound. A single sharp shock, synchronous with the second sound, is also often felt both at the apex and at the base. In size the heart is not enlarged. Indeed, measurement[2] made from teleroentgenograms shows that it tends to be smaller than normal rather than larger. An exact statement of size is, however, difficult to give. Normal size depends on the nature of the patient's activity. It is generally admitted that in the soldier on active field duty, the average size is usually greater by 2 cm. than was his heart before enlistment. Estimates of size should take this fact into consideration. The expected total transverse measurement may be given as between 11 and 13 cm. It is doubtful whether in the effort syndrome cases, when these facts are taken into account, enlargement occurs. The precautions already urged in estimating the size of the heart apply, of course, equally here. On auscultation, much difficulty has been experienced in distinguishing what one hears from the signs of mitral stenosis. The first sound is often unclean. As one might have expected on palpation, it has a serrated quality, the serrations being equal, confined within the limits of the first sound and replacing it. But it is precisely these serrations that cause confusion with the presystolic murmur of mitral stenosis. It need not be pointed out that serrations in the first sound are not the same as the crescendo murmur before that sound.[3] When the rate of the heart is elevated, as is often the case, the difficulty of accurate auscultation is naturally increased. Usually the second sound is not accentuated either at the apex or in the base areas. The absence of accentuation is a sign of value; for although it cannot be said always to be true that when the mitral stenosis is actually present, the second sound is accentuated, this, nevertheless, is generally the fact. The liability to confusion is emphasized because the error in diagnosis has frequently been made and has wrought harm not only to the service but also to diagnostic standards. Occasionally the diagnosis of mitral stenosis is made because in recent years students and physicians have been urged not to fail to make this diagnosis, even if the rumbling presystolic murmur is absent. They have been told that a snapping first sound suffices to establish the presence of the disease. The warning is proper, but insistence ought also to be laid on the fact that later an accentuated second sound should be looked for and found present. It is not contended that the diagnosis of mitral stenosis cannot or should not be made unless the characteristic murmur is present. In fact, the murmur is not always present. But insistence should also be laid on the fact that the diagnosis should be made after due attention has been given to the history of the patient and to exact auscultation. Anxiety to avoid one error has led many into making the other.

2. Medical Research Committee, Special Report Series, No. 8.

3. It is appreciated that insistance on the crescendo character is not quite proper, for, as Gerhardt has pointed out, the crescendo character of the murmur is not a property of its own, but is lent to it, because it terminates, when the P R time is normal, in a sharp first sound.

On occasion it is a difficult matter, even after all precautions have been taken, to be certain that a presystolic murmur is present. Various maneuvers have before now been recommended to make it evident, such as altering the posture of the patient, holding the breath, and undertaking exercise. Morison and Lewis[4] have recently hit on another method, which they say is effective in certain instances. They lay the patient in the recumbent posture and place the bell of the stethoscope at the site at which it is anticipated a presystolic murmur may be heard. The patient then inhales 3 minims of amyl nitrite. During the first ten or twenty beats, the only change is an acceleration in rate; during the second ten or twenty beats, the anticipated murmur may appear; during the third ten or twenty beats, the murmur usually disappears. The duration of the test is short. Auscultation must be practiced continuously throughout its performance.

The effort syndrome is not associated with a disturbance in the rhythm of the heart. Regularity, except for sinus arrhythmia, which is a normal phenomenon, is maintained. Although the affection does not involve a disordered action of the heart (D. A. H.), irregularities may naturally be found, as they are found accidentally in any large group in the community; but they are not a factor in the syndrome.

RANGE OF HEART BEAT

Pulse Rates	Per Cent.	
From 40 to 50	0.1	
From 50 to 60	0.5	
From 60 to 70	1.8	
From 70 to 80	8.5	
From 80 to 90	13.5	
From 90 to 100	22.4	46.2
From 100 to 110	23.8	
From 110 to 120	14.7	26.0
From 120 to 130	11.3	
From 130 to 140	1.4	
From 140 to 150	0.9	
From 150 to 160	0.1	

The rate of the heart beat is usually accelerated. The range, as shown by the accompanying table, is between 90 and 110 in 46.2 per cent., and between 110 and 130 in 26.0 per cent. of the cases, or between 90 and 130 in 72.2 per cent. of the cases. These figures are taken from Hume. There need be no elevation, as the table shows. It is, perhaps, important to point out that the rate tends to become unstable. In the same patient, it may on the same or on successive days fluctuate between wide limits. Sometimes, of course, stability at one or another level may be maintained. The fact of instability is mentioned especially because of the tendency to use cardiac rate in estimating prognosis.

ETIOLOGY

The significance of the affection we are considering has been the subject of a great deal of speculation. Certain suppositions in regard to its cause may be dismissed immediately; the importance of others must be weighed. First may be dismissed the thought that there are racial predispositions toward its occurrence. During the war, cases have been found in all the armies, Central as well as Allies. And among the Allies it is found among Hindustani, Scotch, Irish, Welsh, Canadians, Australians and New Zealanders. No race domiciled in the United States is free. It is found in nonsmoking peoples, like East Indians, as well as in smokers. It cannot, however, be said that smoking is harmless, so far as aggravating the condition is concerned. Investigation has not shown that it is dependent on a specific infecting organism, nor is it always associated with the occurrence of trench fever or rheumatism. Many who have had both diseases have not become subject to the effort syndrome. The liability, however, of men who have suffered from infectious diseases and especially from trench fever to suffer from the effort syndrome should not be overlooked. A point of especial importance relates to the tendency of trench fever to recur. Attacks are known to come on after afebrile intervals. These recurrences must be taken to indicate the possibility of residual infection. In view of the fact that on occasion tachycardia and its attendant symptoms are alone manifest, the infection itself may be regarded as involving the heart. It will be recalled that the occurrences exactly similar are encountered in convalescence from typhoid fever, dysentery and influenza. The relation of the effort syndrome to acidosis is too vague for us to attach importance to the few uncertain experiments that have been reported. By the method of respiratory analysis, Wilson and Levine[5] failed to find that a deviation from the normal exists.

Of more importance is the possibility of the disturbance of thyroid secretion. Symptoms associated with exophthalmic goiter are in some respects like those found in the effort syndrome. The symptoms in common are nervousness, tremor and tachycardia. In the effort syndrome, exophthalmos or thyroid enlargement is usually absent. There need be no diarrhea. Tachycardia may be absent. The tremor is really no tremor, but a shake, and it attains degrees of severity never seen in the most advanced cases of exophthalmic goiter. On the other hand, when tachycardia in exophthalmic goiter develops to as high a rate as is attained in the effort syndrome, there is usually a certain degree of dyspnea as well, and the size of the heart is definitely increased, whereas there is no reason for believing that this occurs in the effort syndrome. Between the conditions, a striking difference is observed at night. When tachycardia and dyspnea in exophthalmic goiter are sufficiently severe to attract attention, they persist, as a rule. In the effort syndrome, on the other hand, both disappear. The presence of small thyroid tumors or slight symmetrical enlargement of the gland can scarcely be taken as evidence in favor of hyperthyroidism. Such enlargements occur in large numbers of persons in certain sections of the United States, as elsewhere. They are not necessarily accompanied by symptoms either of developing exophthalmic goiter or of the effort syndrome.

The fact is appreciated that in the minor grades of both conditions the symptoms may be vaguely defined and might easily be confused. Investigations should be instituted with the view of developing specific methods of diagnosis in the early stages. Such studies should yield important results for diagnosis and consequently for treatment. In the later stages, when the cardinal symptoms of both are well established, no difficulty exists. For the present, reliance in diagnosis must be placed on the symptoms and signs already described.

A word should be said about those cases of the effort syndrome that occur after gassing. Confusion has occurred in relation to them. Many gassed patients have the symptoms of the effort syndrome; many, how-

4. Morison and Lewis: Personal communication to the author.

5. Wilson and Levine: Personal communication to the author.

ever, have not. But both groups develop the symptoms of nocturnal asthma, to which reference has already been made. They have been found to have polycythemia as well. Barcroft and Haldane and Meakins deserve credit for having called attention to this group of patients. Both symptoms, asthma and polycythemia, are properly ascribed to a late stage of gassing. They may, of course, occur in individuals who have also the symptoms of the effort syndrome. But it must be clearly understood that such patients are sufferers from two complaints, late gassing and the effort syndrome. The two are not necessarily associated.

RELATION TO WAR PSYCHONEUROSES

The most difficult part of the subject to discuss is its relation to the war psychoneuroses. In their pronounced forms, these naturally present no difficulty in diagnosis. Neither do the effort syndrome cases without psychoneurotic symptoms cause difficulty. But there are cases in large numbers that exhibit symptoms belonging to both groups. These cases present a twofold problem, one in classification or diagnosis, the other in therapy. The difficulty in diagnosis lies at the very root of the problem. There is no disposition to add new elements of confusion to the subject, but another attitude toward the subject must be suggested. It is a fact that many effort syndrome cases have not arisen de novo as the result of the war. The taking of proper histories brings out the fact that the beginning of the affection is of long standing. The complaints were initially too insignificant and too little insistent to require serious attention. During military service, however, the civil factors of safety fail to suffice for the individual's protection, the defect becomes prominent and the patient suffers. The important point is that the affection is of long standing but latent. It requires a stimulus, like the stress of war, to make the trouble patent. The stimulus becomes operative in a manner already habitual to the individual. The reaction is cardiovascular.

Those classed as psychoneurotics have a similar history. The stimulus that drives their latent defects into consciousness is the same. They differ in that their previous histories and their personal psychology predispose them to a different reaction. The manifestations of their affection lie in the domain of neuropsychiatry and require no detailed description here.

There is another group of more complex nature, the individuals in which react to the stimuli of war by more manifestations, and more varied ones, partly psychoneurotic, partly cardiovascular. In the same way, reactions may be found which are, for instance, gastro-intestinal or muscular. In all these varieties the stimuli furnished by the war may be similar. The reaction is a matter partly of chance, partly of predisposition.

TREATMENT

Lewis has offered a most important contribution to the methods for managing the malady, especially from the military point of view. For this purpose there was required a technic for sorting men in grades for service. He concluded that the proper way of sorting men for physical exertion was to try out the men by physical tests. It was an obvious conclusion. Lewis succeeded in doing this by a system of graded exercises. The system works admirably, as is seen by the fact that in a certain group after eleven months of service, the classification then made proved to be substantially correct. But the limitations under which work was done at the British Military Heart Hospital no doubt prevented the introduction of additions in treatment, which a consideration of the affection indicates are obviously desirable.

The variety of origin of the cases must be remembered, in arranging for their management. Some of the patients are convalescents from acute infections, especially trench fever, bronchitis and pneumonia. The management of convalescence after these infections must be designed to safeguard patients from damage dependent on the relighting of their infection. Relapse after trench fever is known to occur with moderate frequency and should be promptly recognized. When it occurs, it is thought to depend on an involvement of the heart muscle. In such circumstances, physical exertion is naturally not indicated. Other cases are of men who have been gassed. Others have been of long standing and existed before the war. Still others have obviously shown no predisposition to the affection before the war. In any case, the principles of treatment are the same. The general rules of hygiene must, of course, be observed. The men should be made to understand that they are not ill. They should not, therefore, be collected in hospitals. In hospitals, moreover, the constant contact with disease and the suggestions arising from this contact are undesirable but unavoidable. The proper environment for them is supplied by camps under suitable medicomilitary discipline. It is necessary to insist on the medical rather than the military side of the management, although there should be no underestimation of the importance of military discipline. The discipline must be rigid, but appropriate to the degree of disability of the men. Occupation must be found for them, and especially occupation for their minds. It is an error to permit them to rely on their own resources alone. When this side of their treatment is neglected, they speedily become bored, listless and undisciplined. They begin to brood on their disability until their mental background, deranged in the first instance, is worse in the last state than in the first.

In practice, attention should be given to the minor sources of infection, such as infection of the accessory nasal sinuses, the teeth, tonsils and ears. These infections should be removed.

Physical exercises should be arranged for the patients. Three methods are suggested: drill, farm or garden work, and games. The drill should be graded according to the ability of the patient to perform it. It may be varied both as to severity and as to duration. At best, however, drill may occupy only a small portion of the day and may be supplemented by route marches. Farm and garden work may, of course, also be adapted to the capacity for endurance of the individual for work of this kind. It has the advantage of variety and may be performed without that nervous strain which the sharp orders given at drill by the drill sergeant necessarily entails. The introduction of games invites men unconsciously to undertake a great deal of physical exercise without that feeling of compulsion which attaches to the other forms of exercise. Their number may be added to and varied by the imagination of the medical officers. To the forms of exercise may be added, if the facilities are presented, training in occupations of use in the Army. Advice as to these must be sought from time to time. Men are constantly wanted as stenographers, typists, telegraphers, mechanics in gun, automobile or

wagon repairing, railway attendants, and hospital orderlies.

The mention of disturbance in mental background leads naturally to a consideration of the share neuropsychiatrists must have in the treatment of certain of the cases. In point of fact, even when the symptoms are predominantly cardiovascular, the neuropathic side of the picture is frequently prominently developed. The importance of this side of the therapeutic problem, if neglected, may actually increase during the period of treatment. The requirements for aid in this direction vary. The difficulties may be mimetic or inherent in the individuals. And again some men, reticent by nature, in the attempt to suppress interest in their symptoms are troubled by dreams of an uncomfortable kind.

CONCLUSION

It has been my purpose to indicate the general features of this affection of soldiers. The attempt has been made to show how involved the syndrome is, and how it touches intimately other domains in medicine aside from the cardiovascular. Its etiology cannot now be conscientiously indicated, nor its exact relation to the numerous processes involved, which are familiar and the connections of which with this entity immediately suggest themselves. It is impossible to lay down rigid laws for treatment; that may be done only when the exact pathologic physiology is established. But suggestions are made for dealing with the problem not only for the purpose of sorting, which is purely military, but also for the purpose of therapeutic improvement, which is the aim of clinical medicine.

ISOLATION OF INFLUENZA BACILLUS FROM THE BLOOD

REPORT OF TWO CASES

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CASE 1.—*Clinical History.*—The patient was admitted to the hospital, Sept. 27, 1918, two days after the onset of influenza with headache and aching all over. The patient had a cough, but no bloody sputum. The bowels had not moved for two days. The throat was very red. There were a few sibilant râles in the right axilla and anteriorly.

September 29, the temperature was elevated, the pulse rapid, and the entire chest full of large, moist râles. The condition was diagnosed as bronchopneumonia.

September 30, the patient was very much prostrated, the skin dry and harsh. Respiration was markedly increased with almost complete absence of breath sounds over the right middle and lower lobes. There was increased voice fremitus. There was flatness on percussion. There were no râles. The diagnosis was lobar pneumonia.

October 1, the pulse was 124 and rather weak; there was marked elevation of temperature. The right base posteriorly seemed slightly dull and changed in voice sounds. There was no bronchial breathing. The neck was not stiff. The diagnosis was changed to bronchopneumonia, and the subsequent trend of events proved this to be correct.

October 2, the face was flushed, the ears cyanotic, the tongue coated, the pharynx inflamed, and there was dulness at the left base. There were areas of bronchial breathing and also left axillary râles. There were areas of dulness over the right base posteriorly.

October 3, the patient was somewhat cyanotic. Breathing was rapid, and there was impaired resonance over the entire right side, especially the base. There were many râles over both bases, especially the left. The patient's condition was very serious.

October 4, the patient was very cyanotic, the pulse weak and rapid, and the condition serious. The right base posteriorly was dull on percussion, with crepitant râles and distressed breathing.

October 5, there were dulness and râles over both bases. The patient was cyanotic. The pulse was weak.

October 7, both lower lobes showed scattered areas of bronchovesicular breathing.

October 8, the patient appeared slightly improved. There were still many râles throughout the chest. Voice, especially at the base, was very weak. The heart was of fair quality. There was no rigidity of the neck. The pupils were equal. Later the pulse was rapid, the respiration labored, and the patient very weak and cyanotic. Still later, the patient was comatose, very weak and cyanotic. Breathing was rapid and shallow. The pulse was weak. Finally, the patient was profoundly toxic, and too ill to examine.

October 9, the patient died at 2:05 a. m.

Laboratory Diagnosis.—A blood culture was taken, October 9. Ten c.c. of blood were introduced into a bottle containing 150 c.c. of a 1 per cent. glucose broth. The reaction was 0.3 plus. This was incubated at 37 C. Transfers from a twenty-four hour culture were negative. Transfers from a forty-eight hour culture showed a very fine, sparse growth practically unnoticeable unless examined with a hand lens. Morphologically these colonies resembled the influenza bacillus. Smear showed minute gram-negative diplobacilli with all the general appearances of influenza bacilli. Five-tenths c.c. of broth from the seventy-two hour culture was then injected into the peritoneal cavity of a white mouse. The following morning the peritoneal exudate showed large numbers of characteristic gram-negative bacilli, which on transfer gave a typical growth on blood agar plates but failed to grow on blood-free mediums. A mouse died in forty-eight hours. The same organisms were still present in the peritoneal cavity. The heart's blood failed to show growth.

CASE 2.—*Clinical History.*—The patient, admitted to the hospital, Sept. 26, 1918, had been taken ill the day before with cough, headache, backache and pains all over the body, and fever. He had fainted twice.

September 30, there was dulness in the right lower lobe anteriorly on percussion. There were many small, moist râles. No change in voice or respiration was noted. Fremitus was present. The condition was diagnosed as possibly bronchopneumonia.

October 1, there was dulness over the entire right lower lobe. There were many small, moist râles on coughing, and musical, moist râles over the entire right lower lobe. There was fremitus in both lower lobes. The condition was slightly worse than on the preceding day.

October 5, the patient was in a profuse perspiration. There was dulness in the left upper lobe and in the right lower lobe, with signs of consolidation. There were a few moist râles in the other lobes.

October 8, the patient's general condition was somewhat improved. In the afternoon there were some signs of pleurisy.

October 9, the temperature was elevated. The patient still complained of pain in both lower parts of the chest. There was no change in percussion. Friction rub and dry râles were noted especially in the left upper lobe. There was no cyanosis. Cerebrospinal symptoms were absent. The reflexes were normal.

October 10, in the morning, there was no dulness nor change in voice or breathing. There were dry, musical, and large, moist râles throughout both sides of the chest. There were no signs of fluid. In the afternoon the temperature, pulse and respiration were higher. There was no endocardial trouble.

October 11, the patient's condition was not so good. There were general mixed râles throughout the chest.

October 12, there were dry, moist and musical râles of all sizes throughout both sides of the chest, especially in the lower lobes. There were no areas of consolidation. The general condition was very good.

I was unable to complete this history.

Laboratory Diagnosis.—Blood culture was taken, October 10. The same procedure was followed as in the previous case, with practically identical results except that the mouse had not died up to the date of my departure.

COMMENT

These two blood cultures were not taken with any hope of finding the influenza bacillus, but were secured from severely ill patients with the probability of finding the more ordinary bacteria usually associated with respiratory infections. Reasoning on that basis, the logical assumption would be that it is possible to isolate the influenza bacillus from the blood in a sufficient number of clinically influenza cases to prove undoubtedly the etiology of the prevailing epidemic of so-called "Spanish influenza."

Owing to my transfer from Camp Jackson, I am unable to undertake this, but the foregoing short and incomplete report may be interesting to others.

On approximately 100 throat cultures taken for meningitis, the number of plates showing the presence (macroscopically) of influenza colonies has been striking, especially to me after having examined thousands of plates last winter, when its presence did not seem common.

PANDEMIC "INFLUENZA" AND SECONDARY PNEUMONIA AT CAMP FREMONT, CALIF.

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The expected storm of the prevailing pandemic infection broke suddenly on the Eighth Division, U. S. Army, Camp Fremont, Calif., Oct. 8, 1918, and during the next six weeks, 2,418 patients suffering from respiratory diseases were admitted to the base hospital. In addition, many soldiers having more or less mild infections were cared for in the various camp infirmaries in order to avoid overcrowding in the base hospital. Altogether there were, at a conservative estimate, 3,000 cases.

Pneumonia was diagnosed in 408 cases, an incidence of nearly 14 per cent. We know now, however, that there were many cases of pneumonia that were diagnosed as bronchitis, and that the true incidence of pneumonia was greater than that indicated.

Of the 408 patients with pneumonia diagnosed, 147 died, a mortality of 36 per cent. for the pneumonia series and about 5 per cent. for the epidemic. No deaths occurred without a complication of either lobar pneumonia or bronchopneumonia, an observation in accord with that of Christian.[1]

CLINICAL FEATURES

As one reflects on the clinical features of the epidemic, one finds oneself impressed by certain striking and characteristic phenomena:

1. *Hemorrhage.*—Epistaxis was a common feature throughout. At first we looked on it as merely an incidental occurrence, as in typhoid fever, and not as possessing special significance. Instances of epistaxis multiplied, however, and often blood was seen to gush from a patient's nose and mouth. When pneumonia appeared, the patients often spat quantities of almost pure blood. Female patients, of whom there were altogether about 100, had a hemorrhagic vaginal discharge, which at first was thought to be coincident menstruation, but later was interpreted as hemorrhage from the uterine mucosa. Finally, the extraordinary hemorrhagic picture seen at necropsy, together with the constant leukopenia in the initial stages, completed the evidence that led us to believe that an important feature of the disease is some kind of blood dyscrasia, which is of grave significance and suggestive of purpura hemorrhagica. In a few patients, large purpuric areas developed in the skin.

We feel that this condition is due to a depressant influence exerted by the initial infection on the bone marrow, and that it is closely related to the next extraordinary feature of the disease.

2. *Leukopenia.*—In the influenzal stage, leukopenia was practically always found, and at first it appeared to be a feature also of the pneumonic stage. Indeed, one saw many full blown cases of apparently lobar pneumonia with a leukocyte count of less than 5,000; there were five cases with a count of 3,000 or less. Smears from the lungs of some of the fatal cases showed innumerable diplococci with the large pneumococcus type of capsule, and the cultures were positive for pneumococci.

But other pneumonia patients with early leukopenia recovered, and when subsequent counts were made, it was found that in each case there was a gradual rise to from 10,000 to 24,000 leukocytes.

The conviction gradually developed, therefore, that the influence of the initial infection was a depressant one on the bone marrow resulting in leukopenia, while, on the contrary, the pneumonic infection tended to stimulate, as usual, the production of leukocytes, which gradually increased in number in the blood stream as the depressant influence waned. The leukocyte counts, from which the foregoing conclusion was drawn, are given in Table 1.

TABLE 1.—LEUKOCYTE COUNTS IN ONE HUNDRED AND FORTY-EIGHT CASES OF PNEUMONIA

Leukocyte Counts		2,000-3,000	3,000-5,000	5,000-7,000	7,000-10,000	10,000	Average Count
Fifty-Six Fatal Pneumonia Cases:							
First counts	56	3	26	9	12	7	6,320
Second counts	13	..	6	1	5	1	6,730
Third counts	1	..	..	1	..	..	5,800
Ninety-Two Nonfatal Pneumonia Cases:							
First counts	92	2	18	34	14	24	8,360
Second counts	30	..	7	8	5	10	9,080
Third counts	11	..	..	1	2	8	12,800
Fourth counts	8	..	..	..	1	7	13,000
Total counts	211	5	57	52	39	48	

Average leukocyte count in 56 influenza cases, 6,000.
Average first count in 148 pneumonia cases, 6,800.

3. *Types of Pneumonia.*—Two characteristic types of pneumonia were differentiated.

(*a*) Lobar Pneumonia Type: The first, and most common type, was that which when well developed gave the physical signs of lobar pneumonia. The onset usually occurred when defervescence of the symptoms of the initial infection was almost or quite

1. Christian, H. A.: Incorrectness of the Diagnosis of Death from Influenza, The Journal A. M. A., Nov. 9, 1918, p. 1565.

complete, about the third or fourth day. It was ushered in frequently by a chill, a sharp rise of temperature, a localized explosive shower of fine râles usually about the angle of the scapula and more frequently on the left side, and bloody sputum, amounting often to marked hemoptysis. A few roentgenographic examinations at this stage showed shadows indicating that already consolidation was beginning. Occasionally the milder of these cases cleared up quickly without further signs of pneumonia developing, but most of them proceeded to a stage of definite signs of consolidation of one or more lobes.

The temperature curve was irregular, frequently not rising as high as from the initial infection, and usually ending by lysis, the mean duration of the pneumonia fever being about seven days. The pulse rate was slow in proportion to the fever, and the blood pressure was low, the systolic pressure frequently being 100, and the diastolic pressure from 40 to 50. The pulse pressure was good, and there were no signs of cardiac insufficiency except in the fatal cases after the onset of respiratory insufficiency and shortly before the end. The danger never appeared to arise from the effect of the infection on the cardiovascular mechanism.

The respiratory rate, likewise, was slow in proportion to the fever until the toxemia became marked, when the respirations became accelerated and the respiratory abdominal excursions limited. The chief toxic effect of the infection seemed to be exerted on the respiratory mechanism, failure of which, due to excessive toxemia and to the mechanical effect of extensive consolidations and hemorrhagic edema of the lungs, caused the death of patients.

We do not know whether this type is a true lobar pneumonia or a massive bronchopneumonia due to the fusion of small areas, but we believe that it is a lobar pneumonia with the pathologic picture modified by the hemorrhagic exudate and the paucity of leukocytes.

Our reasons for this opinion are:

(1) The onset of the pneumonia was sudden, usually with a chill, frequently after the temperature of the initial infection had fallen almost or quite to normal, and there was no intermediate stage of the physical signs of bronchitis.

(2) The mean duration of the pneumonia fever was about seven days.

(3) The lungs at necropsy showed massive, air-free consolidations without any definite lobular pattern; no pus could be expressed from the bronchi; the bronchial mucosa did not show a purulent exudate or any special inflammatory thickening or change other than marked congestion, and there was practically no fibrin in the exudate. These findings were in marked contrast to the true bronchopneumonia type to be described presently.

(4) The avenue of infection of the lungs did not appear, therefore, to be by extension along the bronchial mucosa, but by way of the blood stream, as is probably the case in ordinary lobar pneumonia.

(5) The bacteriologic findings were different from those of the bronchopneumonia type.

(*b*) Bronchopneumonic Type: The second type was that of true bronchopneumonia. The onset was not clearly defined, the course being continuous with that of the initial infection; the temperature curve was irregular; the sputum was not bloody, but purulent ("nummular"); physical signs of diffuse bronchitis were usually present. Fatal cases sometimes showed a low or even normal temperature with cyanosis and marked "air hunger." The patient belonging to this group had a normal temperature, good pulse, no sputum, and no râles in his chest. The percussion note over the lungs was hyperresonant, the breath sounds distant and scarcely audible; there was marked dyspnea and cyanosis. The diagnosis was not suspected until necropsy disclosed the real condition. The bronchi were full of pus; and little nodules, bronchopneumonic consolidations, were scattered uniformly throughout the lungs. Death appeared to be due to actual asphyxiation.

Five patients with this type of pneumonia developed a puzzling subcutaneous emphysema, which, in the most marked case, extended from the forehead to Poupart's ligament in front and the buttocks behind. The postmortem examination demonstrated in two cases that emphysematous air cells at the root of the right lung had ruptured into the loose mediastinal tissues, and that the air had progressed upward to the neck, and infiltrated the subcutaneous tissues. Cultures from the subcutaneous tissue for anaerobic organisms were negative.

The clinical features of this type, and also the pathologic features, to be described, indicated that it was due to a direct extension of the inflammation down the bronchial mucosa. *B. influenzae* was found in cultures from the pus droplets of the small consolidated areas in the three cases carefully studied bacteriologically at necropsy—twice in pure culture, one with *M. catarrhalis*.

The leukocyte counts in this group are few. In two fatal cases there were 7,600 and 6,000 leukocytes, respectively. In the second case the count rose to 16,400 before death. *B. influenzae* was present in pure culture in the lungs in both cases.

We cannot estimate the relative percentages of the two types of pneumonia, for they were differentiated but late in the epidemic, and the clinical records do not enable one to separate them. It is certain, however, that the first type is far the more common, but the second type is by no means infrequent.

4. *Other Clinical Features of Interest.*—These may be thus grouped together:

(*a*) Frequency of pneumonic involvement of the left lower lobe.

(*b*) Irregularity of the pneumonia temperature and infrequency of termination by crisis.

(*c*) Frequency and grave significance of cyanosis, which often seemed to appear before the onset of respiratory insufficiency.

(*d*) Relatively slow pulse and respiratory rates associated with high temperatures.

(*e*) Low systolic and diastolic blood pressure and good pulse pressure.

(*f*) Relative infrequency of otitis media.

(*g*) Infrequency of empyema and other complications of pneumonia (in only one pneumonia case did empyema develop).

(*h*) High pneumonia mortality rate.

PATHOLOGIC FEATURES

Deaths were always due to pneumonia. In thirty postmortem examinations, lobar pneumonia was diagnosed twenty-five times, bronchopneumonia, five times.

The two types presented striking differences at the postmortem examination:

1. *Lobar Pneumonia Type.*—Frothy, bloody serum poured from the nose and mouth when the body was moved or the head lowered. On section of the skin, dark blood oozed from the cut vessels. The pleural cavities always contained a quantity of serosanguineous fluid, but the pleurae did not show the fibrinopurulent exudate commonly found in lobar pneumonia.

The lungs were extensively involved, there being practically always large areas of consolidation in several lobes; hemorrhages under the pleurae were frequently seen; the lungs were dark red and irregularly mottled, very moist and bloody, the cut surface smooth and velvety; the consolidated areas contained no air, and no pus could be expressed from the bronchi. The early condition was that of acute hemorrhagic edema.

The peribronchial lymphatic glands were very large, dark red, congested, soft and friable.

The heart muscle was dark red, relaxed and flabby, offering a strong contrast to the firm, contracted left ventricle nearly always present postmortem in bodies of patients dying from lobar pneumonia; the heart's blood was fluid and dark, there being only small, flimsy, postmortem clots and no "chicken fat" clots. The abdominal viscera showed marked congestion, the glomeruli of the kidneys standing out distinctly.

Microscopically, the alveoli of the lungs were full of red blood cells in the portions recently involved; in the older portions polymorphonuclear leukocytes became more or less prominent in the exudate; no fibrin was seen; the bronchi were not plugged with pus; the blood vessels were engorged.

2. *Bronchopneumonia Type.*—The tissues of the bodies were dry; there was no "frothing at the mouth"; no blood oozed from small cut vessels; the pleural cavities contained no fluid, but there were patchy areas of fibrinopurulent exudate with recent, easily separated pleural adhesions.

The lungs were very pale and extremely voluminous, and did not collapse when the chest was opened. Emphysematous bullous-like areas beneath and elevating the pleurae were common; these had transparent bubble-thin walls and were divided into numerous compartments by the walls of the dilated air cells. Pus streamed from the trachea when the lungs were removed. Small areas, from 2 to 5 mm. in diameter, of consolidated tissue were scattered uniformly throughout the lungs, and these little areas felt like disseminated conglomerate tubercles. On section, the lungs were dry, the solid areas were gray and granular in appearance, and a drop of pus could be expressed from the center of each. In one case, about half of the right upper lobe was consolidated; it had a mottled gray, granular appearance, and there were numerous points where droplets of pus could be expressed, the large area of consolidation being evidently formed by the confluence of smaller areas of bronchopneumonia.

The peribronchial lymphatic glands were very large, the cut surface gray and granulated. They were soft and friable.

The heart showed nothing remarkable, nor did the abdominal viscera. In one case the spleen was quite large and the malpighian bodies stood out distinctly, and the liver and kidneys showed cloudy swelling. In two necropsies the mediastinal and subcutaneous tissues showed marked emphysema due to the rupture of dilated thin walled air cells on the anterior surface of the root of the right lung into the loose mediastinal tissue.

Microscopically, the consolidated areas of the lungs showed a bronchiole full of pus cells and the surrounding alveoli packed with pus cells and desquamated epithelium, and there was considerable fibrin formation. The air cells of the adjacent uninvolved lung were dilated and the walls were thin; the vessels were not engorged.

BACTERIOLOGIC FEATURES

Cultures from the nasopharynx were made from every patient admitted to two of the wards; 148 patients were examined, and *B. influenzae* was isolated from thirty-seven patients, or 25 per cent. Ten of these patients, or 27 per cent., developed pneumonia. The findings in this series are given in Table 2, which shows also the number of patients that developed pneumonia.

TABLE 2.—BACTERIOLOGIC FINDINGS IN CULTURES FROM THE NASOPHARYNX OF ONE HUNDRED AND FORTY-EIGHT SUCCESSIVE EPIDEMIC CASES

	Number	Per Cent.	Developed Pneumonia	Per Cent.
B. influenzae with other organisms	37	25	10	27
Pneumococcus alone	67	45	15	22
Pneumococcus and streptococcus	22	15	4	18
Pneumococcus, streptococcus and M. catarrhalis	5	3	2	40
Total pneumococci	94	63	21	22
Total streptococci	27	18	6	22
M. catarrhalis alone	16	11	2	12.5
Total M. catarrhalis	21	14	4	19

Similar cultures from the nasopharynx were made in 537 cases. These were usually selected severe cases of respiratory infections. The results are given in Table 3, and other bacteriologic findings in tables that follow.

TABLE 3.—BACTERIOLOGIC FINDINGS IN CULTURES FROM THE NASOPHARYNX OF FIVE HUNDRED AND THIRTY-SEVEN SELECTED SEVERE EPIDEMIC CASES

	Number	Per Cent.
B. influenzae	250*	46
Pneumococci	149	28
Streptococci, all kinds	169	32
Staphylococci, all kinds	64	12
M. catarrhalis	62	11.5

* B. influenzae was usually associated with other organisms. There were a few pure cultures.

TABLE 4.—BACTERIOLOGIC FINDINGS IN CULTURES FROM THE NASOPHARYNX OR SPUTUM OF ONE HUNDRED AND FIFTY-EIGHT PNEUMONIA CASES

	Number	Per Cent.
B. influenzae	58*	38
Pneumococci	64	40.5
Streptococci, all kinds	46	29
Staphylococci, all kinds	21	13
M. catarrhalis	11	7

* B. influenzae was practically always associated with other organisms.

In three cases of the bronchopneumonia type, smears from the pus droplets expressed from the small consolidated areas in the lungs showed innumerable small gram-negative bacilli, and *B. influenzae* was cultivated, twice in pure culture and once with *Micro-*

coccus catarrhalis. Cultures from the heart's blood were negative in all three cases.

Pneumococci from all cultures were typed thirty-eight times.

For cultures of *B. influenzae* during the first part of the epidemic, the surface of ordinary blood agar plates was inoculated. Later the blood agar was heated to 70 C. for fifteen minutes, poured in plates, and the surface inoculated. The latter method proved much more effectual for the isolation of *B. influenzae*.

TABLE 5.—BACTERIOLOGIC FINDINGS IN POSTMORTEM CULTURES FROM THE LUNGS IN TWENTY LOBAR PNEUMONIA CASES

	Number	Per Cent.
B. influenzae and S. viridans	1	5
B. influenzae and pneumococci	2	10
Pneumococci alone	9	45
Pneumococci and S. hemolyticus	1	5
S. viridans alone	1	5
Staphylococci	1	20
M. catarrhalis	0	0
Sterile cultures	2	10

TABLE 6.—BACTERIOLOGIC FINDINGS IN POSTMORTEM CULTURES FROM HEART'S BLOOD IN TWENTY LOBAR PNEUMONIA CASES

	Number	Per Cent.
B. influenzae and S. viridans	1	5
B. influenzae and pneumococci	2	10
Pneumococci alone	7	35
Pneumococci and S. hemolyticus	1	5
S. hemolyticus alone	1	5
S. viridans alone	1	5
Staphylococci	4	20
Sterile cultures	3	15

TABLE 7.—TYPES OF PNEUMOCOCCI IN THIRTY-EIGHT CULTURES

Types	Number	Per Cent.
1	0	0
2	3	8
2 a	1	3
3	9	23
4	24	63

ETIOLOGY

The results of the bacteriologic examinations are disappointing and their value small in proportion to the amount of work entailed.

B. influenzae was a common organism during the epidemic, and was the one encountered most frequently in the group of selected severe respiratory infections. It was less frequently found than the pneumococcus in the series of 148 consecutive cases, and it was isolated only three times in the postmortem cultures from the lungs and three times from the heart's blood in twenty lobar pneumonia cases, twice with the pneumococcus and once with *Streptococcus viridans*. It was present, however, in cultures from the lungs in all of three fatal cases of bronchopneumonia, twice in pure culture and once with *Micrococcus catarrhalis*.

In view of the fact that *B. influenzae* is rather an uncommon organism in most epidemics of infections of the upper respiratory tract, its relative frequency in this epidemic may be of some etiologic significance. Otherwise there is no evidence that it is more than an incidental or secondary invader. Certain clinical phenomena point to the latter view, and to the fact that the organism initiating the epidemic is unknown.

The argument based on the clinical phenomena referred to is:

1. The initial infection, that is, the epidemic disease, apparently caused the hemorrhagic phenomena and the leukopenia.

2. In the purest and most intense *B. influenzae* infections (that is, in the three bronchopneumonia cases in which *B. influenzae* in great numbers was found in the pus filling the bronchial tree), there were no hemorrhagic manifestations, and two leukocyte counts in one of the cases showed a rise from 6,800 to 16,400.

3. Therefore, it seems improbable that *B. influenzae* was the organism initiating the epidemic.

It may be objected that there is no proof that the initial infection caused the hemorrhagic phenomena, which might have been caused by a secondary invader with special characteristics, for example, pneumococcus Type IV. This objection is difficult to meet, especially in view of the fact that fatal cases of the lobar pneumonia type showed hemorrhagic phenomena of extreme degree and a persistent leukopenia. However, many uncomplicated cases of the epidemic disease manifested hemorrhagic phenomena and usually leukopenia, while in nonfatal secondary pneumonia cases both the hemorrhagic phenomena and the leukopenia disappeared during the course of the pneumonia. As we have stated elsewhere, we believe that the hemorrhages and the leukopenia were both due to a depressant action of the initial infection on the bone marrow, and that the secondary pneumonia infection tends to reactivate the bone marrow, which responds as the primary influence wanes. We believe, further, that in fatal cases the depressed bone marrow cannot react to the secondary stimulus, and hemorrhages and leukopenia persist.

From the evidence at hand, we feel justified, therefore, in adopting the following working hypothesis:

(*a*) The organism of the initial infection of the epidemic is unknown. It seems probable that it is an ultramicroscopic filtrable virus.

(*b*) Important features of the initial infection are hemorrhagic phenomena and leukopenia, indicating depressed activity of the bone marrow. Microscopic studies of the bone marrow and studies of the blood with reference to the platelets and the elements of coagulation are indicated.

(*c*) The primary infection causes lowered resistance to certain secondary organisms.

(*d*) The lobar pneumonia type of the secondary pneumonias is caused by a number of organisms, chief of which are pneumococci, *Streptococcus hemolyticus* and *Streptococcus viridans*. Pneumococci, Type IV, predominate.

(*e*) The bronchopneumonia type of the secondary pneumonia is caused by *B. influenzae*.

SPECIAL BLOOD EXAMINATIONS

Coagulation Tests.—An attempt was made to determine whether or not some element of coagulation was lacking in the blood. Two methods were used.

1. The coagulation time of the blood of fifteen patients was determined by the following technic: A syringe was thoroughly cleaned and sterilized, and the walls were moistened with physiologic sodium chlorid solution, enough being left to fill the needle so as to prevent the introduction of tissue juices. The needle was then introduced into a vein, an attempt being made to plunge it immediately into the vein so as to avoid

injuring tissues. Four c.c. of blood were aspirated and expelled into a thoroughly cleaned and dried test tube, 20 mm. in diameter. The blood was allowed to coagulate until the clot held intact to the bottom, when the tube was inverted. The time required for this was taken as the criterion of the coagulation time. The results are given in Table 8.

TABLE 8.—COAGULATION TIME WITH FRESH BLOOD AND 20 MM. TEST TUBES

	Number of Cases	Coagulation Time, Minutes
Normal controls	4	From 12 to 18
Hemorrhagic cases	3	6½ to 10
Hemorrhagic cases	11	11 to 15½
Hemorrhagic cases	1	22

The variations of the coagulation time were within the limits of accuracy of the test, and showed no definite deviations from normal.

2. A second series of eleven tests was made by oxalating the blood, making a total strength of 0.1 per cent. sodium oxalate, separating the plasma and adding increasing quantities of calcium chlorid, 0.5 per cent. Five drops of plasma were placed in each of three small tubes, and 1, 2 and 3 drops, respectively, of the calcium chlorid solution were added. The tube in which coagulation occurred first was taken as the one indicating the coagulation time.

TABLE 9.—COAGULATION TIME WITH OXALATED PLASMA AND CALCIUM CHLORID*

	Number of Cases	Coagulation Time, Minutes
Normal controls	3	From 7 to 12
Hemorrhagic cases	2	Under 7
Hemorrhagic cases	4	7 to 12
Hemorrhagic cases	3	12½ to 16
Hemorrhagic cases	1	17
Hemorrhagic cases	1	5½ hours

* Simon, C. E.: A Manual of Clinical Diagnosis, Philadelphia, Lea & Febiger, 1918, p. 105.

Four of the foregoing tests showed apparently a slight increase of coagulation time, and one a marked increase, the plasma requiring five and one-half hours to coagulate. A second test of this blood, made six hours after the administration intravenously of coagulen (to be discussed later) showed a coagulation time of only sixteen minutes.

The first method of testing coagulation time requires extreme care, for there are many influences tending to error that must be controlled. These influences all tend to shorten the coagulation time. Therefore, the absence of delayed coagulation in the series is not conclusive proof that some element of coagulation is not deficient.

The second method is less subject to technical errors, and the results are more dependable. The results of the tests in this series, however, are not sufficiently definite for conclusions to be drawn. The single test showing a markedly prolonged coagulation time, in the absence of other corroborative tests, must be looked on with the suspicion that the delay was due to some error in technic.

Bleeding Time.—A clean puncture of the ear was made, and the drop of blood was blotted up every fifteen seconds with filter paper until the paper was no longer stained. The time required is the "bleeding time" (Duke). The few tests that we made showed bleeding times within normal limits—from one and one-half to three minutes. A prolongation of bleeding time, according to Duke, is due to platelet deficiency, the number being insufficient to block the ends of the bleeding vessels. There was no evidence, therefore, from these tests that a deficiency of blood platelets existed. No platelet counts were made, but examination of carefully prepared cover-glass preparations of blood showed no apparent decrease of platelets.

Summary.—Clinical phenomena indicate that an important and grave feature of the epidemic disease is a blood dyscrasia manifested by hemorrhages and leukopenia. It is thought to be due to a depressant influence exerted by the initial infection on the bone marrow. Our incomplete laboratory examinations have not indicated clearly the nature of the blood dyscrasia, if there be one.

TREATMENT

Nonspecific.—Patients suffering from the upper respiratory infections received only the usual care of rest in bed, abundant food, cathartics and palliatives, such as acetylsalicylic acid. Great care was taken during convalescence to avoid exposure and overexertion, which, we believed, might be predisposing, etiologic factors of pneumonia.

The pneumonia patients were treated from the point of view of husbanding the defensive resources of the patient in order to gain time for the development of the offensive forces of immunity. Therefore, considering the fact that the work of the heart and respiratory mechanism is already increased above normal in pneumonia, stimulants were avoided, and an effort was made to keep the patients as nearly as possible at rest. Morphin was used freely to allay restlessness, pain and coughing and in an effort to reduce the respiratory rate and to increase the abdominal respiratory excursions, thereby to prevent fatigue of the respiratory center and to increase the efficiency of each respiratory effort. We felt safe in any given case as long as the abdominal respiratory movements remained good. The heart appeared to be affected relatively little by the infection, and the pulse usually continued good after respiratory insufficiency had set in. Oxygen was given for periods of five minutes with twenty-minute intervals to patients with respiratory insufficiency and cyanosis. It seemed to give temporary relief to some patients, but there was no evidence that it affected the final outcome. As a last resort, camphorated oil and caffein were given hypodermically as stimulants in a vain effort to "tide over" a critical period. Digitalis was not used. During the first half of the epidemic, whisky, one-half ounce, and strychnin, one-fortieth grain by mouth, were given alternately every two hours. These doses did not appear to have any effect on the patients, and it is our impression that the patients in this series did no better or worse than those of the later series, nor was there any significant difference in the mortality of the two series. Hydrotherapy was used externally and internally to combat the fever and toxemia.

In our plan of symptomatic treatment we find that we are in complete accordance with Strouse and Bloch.[2]

In regard to the use of opiates, one of us (Brem) has studied the effect on the respirations in pneumonia of a combination of heroin, one-twelfth grain, and codein, one-fourth grain, given hypdermically, and he has

2. Strouse, Solomon, and Bloch, Leon: Notes on the Present Epidemic of Respiratory Disease, THE JOURNAL A. M. A., Nov. 9, 1918, p. 1568.

found it preferable to morphin for the prevention of respiratory fatigue. Heroin and codein seem to have a synergistic action, and they often lessen markedly the respiratory rate while definitely increasing the respiratory excursions. They should be given every four hours for a respiratory rate of 36 or greater, a rate of 40 per minute having been found to be approximately the danger line.

Their effect is slight when the respiratory rate approaches 50 per minute. Pneumonia patients tolerate well large amounts of opiates, and the only contraindications are tympanites and a failure of the respirations to increase in depth while lessening in rate. The latter contingency should be judged by the excursion of the abdominal respiratory movements.

In two cases of the bronchopneumonia type, epinephrin and atropin were given to dilate the bronchi, and the head was lowered to promote drainage. The treatment was ineffectual, and both patients died.

Specific Treatment.—Polyvalent antipneumococcus serum was given in four unselected cases early in the course of pneumonia. Two of these patients made rather rapid recoveries, one ran a moderately severe course but recovered, and one died. This did not seem to be a deviation from the natural course of the disease uninfluenced by treatment, and since we did not consider the treatment immunologically hopeful we did not continue it.

Serum from five convalescent patients was pooled and 35 c.c. were given to each of five selected dangerously ill patients, all of whom were spitting blood. Though the blood spitting practically ceased in four cases and decreased in the fifth, all five patients died. This series does not furnish evidence against the value of convalescent serum, for only one comparatively small dose was administered to each patient, and at that time all of the five patients were extremely ill. We should have pursued investigations along this line but for other considerations, which will be discussed presently.

Antipneumococcus serum, Type I, was not used, as no Type I pneumococci were isolated.

Vaccines have not been used either prophylactically or in the treatment of the epidemic cases, as it seemed to us that there was no reasonable hope of benefit to be derived from their administration.

Coagulen Treatment.—In view of the frequent bleeding, it was thought that some coagulant might be effectual in combating the hemorrhagic diathesis. One of us (Casper) suggested a trial of coagulen-Ciba. As the first few intravenous injections seemed to check epistaxis and blood spitting within twelve hours, its use was continued and the results proved gratifying. At one time, we were unable to obtain coagulen, and thromboplastin-Squibb was substituted. This preparation did not prove as effectual as coagulen, and its use was abandoned. The apparent result of coagulen treatment on the mortality rate is shown in Table 10.

It is evident that coagulen is ineffectual when administered to seriously ill patients in the late stage of the disease. This result was anticipated. But the low mortality, 6.5 per cent., in the unselected early group against the 36 per cent. general mortality for pneumonia in the epidemic, seems very significant, especially when considered together with the clinical observation that visible hemorrhage (epistaxis, blood spitting and metrorrhagia) appeared to be checked by the administration of coagulen.

By "unselected" in the unselected group, it is meant that the patients were not selected with reference to the mildness of the symptoms. They were selected in the sense that they manifested some evidence of hemorrhage.

We feel that the beneficial result was due to the prevention of further hemorrhage into the alveoli of the lungs. The pathologic evidence favors the view that the initial pulmonary pathology of the lobar pneumonia type is a hemorrhagic edema. Several of the patients to whom coagulen was given had had a sharp rise of temperature during defervescence of the initial attack, they had begun to expectorate bloody sputum, and the characteristic explosive shower of fine râles could be heard over a large localized area about the angle of the scapula. After the coagulen injection, the blood spitting ceased, no physical signs of consolidation of the involved area developed, and the patients made a rapid recovery. However, roentgenographic examination made early in convalescence showed that there had been considerable central consolidation of the lung in the area where the râles were heard.

TABLE 10.—RESULTS OF COAGULEN TREATMENT

	Cases	Deaths	
		Number	Per Cent.
Total patients treated	70		
Unselected cases, early lobar pneumonia type	46	3	6.5
Selected cases, late, seriously ill, lobar pneumonia type	7	7	100.0
Total deaths from coagulen-treated pneumonia patients	..	10	18.9

Comment.—The modus operandi of coagulen action is not clear. Our laboratory tests, which are incomplete, do not show, with one exception, a delayed coagulation time, though postmortem findings indicate that such is the case. Further tests may correct those we have made. If the blood dyscrasia were due to platelet deficiency, the action would be more difficult to explain, for platelet deficiency can be effectually combated, so far as is known, only by the transfusion of fresh whole blood. Counts of the platelets were not made. However, the "bleeding time" was not prolonged in the tests made, and therefore platelet deficiency seems unlikely. Blood smears did not show any apparent decrease of platelets.

We are aware that Hanzlik,[3] in testing coagulen, administered intravenously to bleeding dogs, found its influence on the hemorrhage variable, and that the results ran parallel with the effect on the blood pressure. But his experiments were made with presumably healthy dogs in whose blood no element of coagulation was lacking. It is probable that these experimental data do not indicate what might happen in a blood dyscrasia due, for example, to prothrombin deficiency, which coagulen might remedy.

We wish to emphasize that we hold no brief for coagulen to the exclusion of other coagulants. It has been found to be a convenient and apparently efficient remedy. But it is quite possible, and indeed probable, that some other antihemorrhagic agent may be more efficient. We attribute the results obtained solely to its influence on the hemorrhagic diathesis, and we would suggest that other remedies that have given

3. Hanzlik, P. J.: Journal Pharmacol. and Exper. Therap., 1918, 12, 119.

apparently good results (convalescent serum, horse serum and polyvalent antipneumococcus serum) act in the same manner.

We have prepared coagulen for intravenous injection by dissolving 1.5 gm. in 30 c.c. of distilled water or salt solution, making a 5 per cent. solution. This is sterilized by boiling two minutes and the cloudy preparation is not filtered.

With the first lot used, no reactions were observed following the injections, but with the second lot a chill and increased fever frequently followed. On the following day the fever usually dropped to or nearly to normal. In other words, there seemed to be a reaction similar to the reactions following intravenous typhoid vaccination, proteose injections, etc. The result appeared to be beneficial, but we do not advocate using coagulen from this point of view, and we would prefer, at present, not to induce the "chill and fever shock," for the mechanism of its beneficial action and the conditions of safety are not understood. However, in our cases it has done no harm.

SUMMARY

1. The epidemic of acute respiratory infections numbered about 3,000 cases. A secondary pneumonia developed in 408 of the cases, an incidence of about 14 per cent. There were 147 deaths from pneumonia, a mortality of 36 per cent. for the pneumonia series, and of about 5 per cent. for the epidemic.

2. Hemorrhage was a prominent feature of the epidemic cases. Epistaxis was common, blood spitting and even hemoptysis occurred in the pneumonia cases, metrorrhagia was the rule in female patients, purpura of the skin occurred several times, and necropsies showed a fluid condition of the blood and hemorrhagic edema of the lungs. There was, therefore, clinical evidence of a hemorrhagic blood dyscrasia. Laboratory tests to determine the nature of the dyscrasia did not furnish conclusive evidence.

3. Leukopenia was constant during the initial infection and during the early stage of pneumonia. It persisted throughout the course of most of the fatal cases of pneumonia, but during the course of the nonfatal cases the leukocytes gradually rose to from 10,000 to 24,000. The conclusion was reached that the initial infection exerted a depressant influence on the bone marrow, while the secondary pneumonic infection tended as usual to stimulate the production of leukocytes, which increased in number as the primary influence waned.

4. The secondary pneumonias divided themselves into two types: (1) the lobar pneumonia type, and (2) the bronchopneumonia type.

5. Bacteriologic studies threw no light on the etiology of the initial infection. *B. influenzae*, pneumococci (nearly all of Type IV), and streptococci were the predominating organisms found. It is believed that the virus of the initial infection of the epidemic is still unknown; that the secondary lobar pneumonias were due to pneumococci and streptococci, pneumococci predominating, and that the bronchopneumonias were due to *B. influenzae*.

6. Treatment of the hemorrhagic diathesis by the intravenous injection of coagulen appeared to be effectual. This treatment was effectual only in the stage of the initial infection and in the early stage of the lobar pneumonia type of the secondary pneumonias. It is of no value in the late pneumonias.

ACUTE MENINGOCOCCIC ENDOCARDITIS AND SEPTICEMIA *

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Although the portal of entry of the meningococcus has never been demonstrated, the evidence in favor of the nasopharyngeal route to the cerebromeninges has been so strong that it has been more or less generally accepted. Whether, however, it reaches the meninges by way of the blood stream or more directly by the olfactory nerves or ethmoid sinuses is still a much discussed detail. A growing list of cases of meningococcic septicemia (Baeslack and collaborators,[1] Raffaelli[2] and others) and a few acute meningococcic endocarditis (Worster-Drought and Kennedy,[3] Cecil and Soper[4]) have now been reported.[5] Furthermore, the type of initial fever and the finding of meningococci in the petechiae and elsewhere indicate that in many cases at least the infection is temporarily generalized (Netter[6]) and the occasional isolation of meningococci from the blood prior to their detection in the spinal fluid is added proof that the route of entry from the nasopharynx is probably the blood stream. It would seem probable that, just as typhoid and pneumonia (which start as local diseases of the intestine and lung) are for a short period true septicemias with occasional lesions of distant parts, so also the meningococcus invades the whole system, but in the majority of cases eventually exerts a selective affinity for the meninges. In a few the septicemic features may persist and overshadow the meningitic element (Nankivell[7]) or even cause death without either clinical or postmortem signs of meningitis (Herrick,[8] Pybus,[9], Andrewes,[10] and Cecil and Soper[4]).

Such facts as the foregoing have led Herrick to believe that the disease is not primarily a meningitis, and that "meningococcic sepsis," or "spotted fever," are better terms than "epidemic cerebrospinal meningitis." Similarly he believes that intravenous serum treatment should precede and is more important than intraspinal injections. Whether or not further investigations will support this extreme view, the following three cases, occurring within a year among sixteen

* From No. 16 General Hospital, B. E. F.

1. Baeslack, F. W.; Bunce, A. H.; Brunelle, G. C.; Fleming, J. S.; Klugh, G. F.; McLean, E. H., and Salomon, A. V.: Cultivation of the Meningococcus Intracellularis (Weichselbaum) from the Blood, THE JOURNAL A. M. A., March 9, 1918, p. 684.

2. Raffaelli, G.: Sulla Presenza dei Meningococci nel Sangue, Gaz. d. Osp., 1917, **38**, 685.

3. Worster-Drought, C. W., and Kennedy, A. M.: Cerebrospinal Fever: Mode of Infection by the Meningococcus, Lancet, London, 1917, **2**, 711.

4. Cecil, R. L., and Soper, W. B.: Meningococcus Endocarditis with Septicemia: Its Bearing on the Mode of Infection in Epidemic Cerebrospinal Meningitis, Arch. Int. Med., July, 1911, 1.

5. The rarity of meningococcic endocarditis is shown by the statement of MacCallum (Textbook of Pathology, Ed. 1, p. 528) that only one such case occurred in his long service and none in Councilman's.

6. Netter, A.: The Presence of the Meningococci in the Purpuric Elements of Meningococcic Infections, Brit. Jour. Child. Dis., 1917, **14**, 101, 104; Rev. de med., 1917, **33**, 133.

7. Nankivell, A. T.: Personal communication to the authors.

8. Herrick, W. W.: The Epidemic of Meningitis at Camp Jackson, THE JOURNAL A. M. A., Jan. 26, 1918, p. 227.

9. Pybus, F. C.: Case of Fulminating Meningococcus Septicemia, Lancet, London, 1917, **1**, 803.

10. Andrewes, F. W.: Case of Acute Meningococcal Septicemia, Lancet, London, 1906, **1**, 1172.

cases of cerebrospinal meningitis, may add weight to the already imposing list of this type of case:

REPORT OF CASES

CASE 1.—*Clinical History.*—Private S. M., aged 28, had been in the service eleven months and in France four months. His past history was negative, except for occasional attacks of bilious vomiting and furunculosis. His present illness began suddenly with rigor followed by pyrexia and vomiting. The patient stated that he had very severe pains in the back of the head and neck and pain in the back. The pain in the neck was greatly aggravated by motion and radiated down the spine. Pain was also felt in the shins. The heart and lungs were normal. The vomiting continued for several days, jaundice appearing on the fifth day. Pyrexia continued between 101 and 102 F. and the pulse from 80 to 90 per minute. On the seventh day of the disease, a generalized purpuric eruption appeared all over the body, most marked on the limbs (that is, five days later than in Case 2). The leukocyte count at this time was 35,000, and a lumbar puncture gave a turbid fluid, under pressure, with numerous polymorphonuclear leukocytes but no organisms. The next day the patient complained of intense headache and pain in the back of the neck. There was distinct muscular rigidity. The abdominal reflexes were normal, and a slight Kernig's sign was obtained. The Babinski reflex was negative. The purpuric eruption remained unchanged. The eye grounds were normal and the patient was conscious. For the next few days the temperature remained about 103. The patient was drowsy and swallowed with difficulty. The petechial hemorrhages became larger and more extensive. A blood examination at this time (fourteenth day of the disease) showed 48,000 leukocytes (polymorphonuclears, 94 per cent.; small lymphocytes, 4 per cent.; large and transitional cells, 2 per cent). On the following day there was paralysis of the muscles of the left arm, and by the eighteenth day of the disease the patient was unable to swallow. With the exception of the paralyzed muscles, there was general spasticity of the body, the petechial eruption remained the same, and subconjunctival hemorrhages appeared in both eyes. Respiration became more labored; and though the meningeal symptoms seemed lessened during the week, fever continued and the patient gradually failed, till death occurred on the nineteenth day of the disease.

Nine lumbar punctures were made, and each withdrawal of spinal fluid was followed by intrathecal injection of 30 c.c. of curative serums (two of Pasteur's, four of Lister's polyvalent, and three of Gordon's Type II serum). Type II meningococcus had been isolated from the spinal fluid both at the casualty clearing station and the base hospital independently. In addition as the patient's condition at one time seemed more septicemic than meningitic, one intravenous injection of 30 c.c. of Gordon's Type II serum in 1½ pints in physiologic sodium chlorid solution was given.

Laboratory Examinations.—Daily lumbar punctures gave in the beginning an excess of pearly, turbid fluid, with 96 per cent. of polymorphonuclears, and on standing a heavy, yellowish, purulent sediment. Gram-negative, intracellular diplococci were found without difficulty in the first two smears. On trypsin agar plates there were a few viscid, white colonies, which grew on agar only at incubator temperature, gave acid on glucose and not on saccharose, and agglutinated up to 1:400 with Type II (Gordon) antiserums and slightly with Type IV antiserums. From the third puncture on, the spinal fluid was clear and colorless, and no organisms were obtained in either smear or culture. (On the last smear examined, from fluid taken shortly before death, two large clumps of apparent meningococci were observed.)

Necropsy.—There were numerous petechiae, not only of the skin, but also of the pleura-pericardium, and peritoneal covering of the stomach and liver, and of the mucosa of the stomach, intestine, the pelvis of kidney and the ureters. The heart was of normal size and color. On the posterior aortic valve was a rather soft, flat, grayish vegetation, 3 mm. in diameter, and on the anterior aortic and both mitral valves, several soft, glistening, yellowish, minute spots, that were easily wiped off. Smears from these valves showed numerous polymorphonuclears and many large, round, gram-negative cocci, mostly in pairs, both intracellularly and extracellularly. Smears from the heart's blood and pericardial fluid gave similar results. Examination of the brain and cord showed a slight excess of clear, serous fluid, but no gross microscopic signs of meningeal inflammation or exudate. A smear of subpial scrapings showed a few polymorphonuclear and intracellular meningococci. The other organs showed nothing noteworthy except areas of intense congestion of the kidney, liver and spleen, and localized infiltration of leukocytes and beginning hyaline change in these organs.

CASE 2.—*Clinical History.*—Lance Corporal L. D. D., aged 23, three years in the service and two years in France, with negative history, was taken suddenly ill, on April 4, 1918, and soon developed a temperature of 104 F. with rapid pulse and muttering delirium, alternating with periods of irritability. He did not vomit, the pupils were equal, and there was no squint. The patient's condition was generally spastic, and he quickly sank into what was termed a "typhoid state." There was incontinence of urine. On admission two days later the temperature was 102, pulse 140. The patient was comatose, breathing heavily, the pupils were sluggish, slightly dilated and equal, and at no time could he be aroused. The tongue was coated and moist. There was no vomiting. There was general muscular spasticity. The head was retracted and the neck rigid, while in the muscles of the face were numerous fibrillary contractions, although there was no general convulsion of the body. Incontinence of the urine continued. The bowels were constipated. A petechial rash was profusely distributed over the chest and abdomen, but especially the limbs. The following day the temperature was 102, respiration 66 and pulse 140, death taking place on the afternoon of the 7th, after an illness of about seventy-two hours.

Laboratory Examinations.—The first lumbar puncture was made at No. 2 Stationary Hospital on the second day of illness. The spinal fluid was found to be under pressure, having a slight opalescence. The centrifuged deposit of pus contained a few gram-negative diplococci. During the evening of the same day 30 c.c. of Lister Institute polyvalent automeningococcic serum were given intravenously. The following morning 50 c.c. of clear spinal fluid were removed at this hospital and 30 c.c. of the same polyvalent serum injected intrathecally. The centrifuged specimen of the clear fluid showed a moderate number of gram-negative diplococci, chiefly intracellular, and gave a few characteristic colonies on trypsin agar. These fulfilled the various cultural requirements, but agglutinated with all four of Gordon's type antiserums up to 1:400.

Necropsy.—Twelve hours later, no gross evidence of a lesion of the brain or cord or meningeal exudate could be detected. Histologically, the only sign of meningitis present was an occasional leukocyte beneath the pia mater. Near the bases of the mitral leaflets there were numerous minute, glistening vegetations, which could easily be wiped off. Smears from these gave numerous polymorphonuclears and endothelial cells and many gram-negative diplococci. Smears from the heart's blood also showed gram-negative cocci, arranged in pairs and short chains of pairs, and gram-positive rods. Rather marked areas of round cell infiltration were present in the liver and kidney parenchyma, with bile staining of central cells of the liver lobules and fibrous obliteration of some of the kidney tubules and glomeruli.

CASE 3.—*Clinical History.*—Private P. W. K., aged 23, was admitted to the hospital after an illness of twenty-four hours with a history of stupor and rigidity of the neck. The temperature was 102.2 F., pulse 78, respiration 38. The past history was negative. On admission the patient was semiconscious, with rigidity of the neck and back and pain in the head and back, and the temperature was 97. The patellar reflexes were normal. Babinski's and Kernig's signs were absent, although the latter had before been well marked. A pronounced petechial rash was present over the shoulders and chest. The lungs were clear and no cardiac murmurs were detected. The following day the temperature was normal, respirations were labored and cyanosis was present. The

patient at times was delirious, but for the most part remained quiet in a state of semiconsciousness, responding to questions, when addressed. During the night the pulse became much more rapid and weaker. Tracheal râles were marked and the patient died next morning after an illness of four days. The petechial eruption remained the same throughout.

Laboratory Examinations.—Three lumbar punctures were performed. On the first two occasions more than 75 c.c. of turbid fluid were withdrawn, and from each sample a few intracellular diplococci were found by smear. On trypsin agar on the first occasion a rich growth of pale, viscid, characteristic colonies was obtained, but while these behaved normally on agar, they failed to produce acid on glucose as well as on saccharose. Agglutination tests were not tried. The third lumbar puncture gave 20 c.c. of clear, dark, brownish fluid. Like others it contained a few intracellular organisms, but failed to grow on trypsin agar cultures.

Necropsy.—The spinal pia mater was considerably thickened (2 mm.) and its inner surface bathed in pus. The cerebral and cerebellar pia was thin and transparent, but in the spaces over the large fissures there were distinct collections of pus. Smears from both brain and cord meninges gave numerous polymorphonuclears and numerous large gram-negative diplococci, chiefly intracellular. The cut surface of the cerebrum presented a typical "shaven beard" appearance of minute hemorrhages. The heart was pale and flabby, with some dilatation of the right chambers. A few pin point glistening spots on the mitral valve were shown by smear to contain leukocytes and a moderate number of gram-negative diplococci. There was also an acute staphylococcic pleurisy and confluent bronchopneumonia of the right side. There was a cloudy swelling and congestion of the viscera.

COMMENT

Besides the occurrence of acute vegetative endocarditis in all three cases, and the natural accompaniment of meningococci in the blood stream, there are a few details of the cases to be emphasized. The early appearance of the petechial rash in all, and the isolation of the gram-negative diploeocci from the petechiae in the only instance tried, may be taken as evidence of the early generalization of the infection through the body. In such cases, therefore, the early appearance of the petechial rash should be taken as an indication for early intravenous injection of specific antiserum. The earlier form of macular rash that has occasionally been described was not mentioned in the case histories, and the opportunity for determining its presence had passed when the patients had reached this hospital. The lessening of meningeal symptoms in Case 1, and the absence of signs of meningitis at necropsy show the local success of the specific intrathecal treatment. The necessity for intravenous treatment in this case was also realized, but its futility in the presence of acute valvular vegetations needs no further comment.

The presence of intracellular meningococci in the spinal fluid in Case 3 after they failed to grow on trypsin agar is a not uncommon occurrence in this and other laboratories. Whether or not such organisms are to be considered dead or merely influenced in such a way that they will not grow under the artificial methods employed, is a point that cannot now be decided.

SUMMARY AND CONCLUSIONS

1. Three cases of fatal cerebrospinal meningitis, in which acute meningococcic vegetations on the aortic and mitral valves were found at necropsy, emphasize the importance of the possible septicemic factor in this infection.

2. The early occurrence of the petechiae in all three cases may be a useful indication that in similar cases a septicemia has been established, and intravenous as well as intrathecal medication thereby indicated.

3. In the ordinary nonfulminating, nonpetechial type of meningococcus infection (whether or not meningococci have temporarily entered the blood stream), the chief pathologic lesion being undoubtedly in the meninges, the chief route of specific treatment should be intrathecal.

4. The disappearance of meningitic symptoms, with persistence of signs of septicemia, should be an indication to substitute intravenous for intrathecal treatment, although if actual vegetations are present on the valves, it will rarely, if ever, be successful.

5. If, as in cases quoted in the literature, the presence of meningococci can be determined in the blood stream before the onset of meningitis, intravenous treatment may abort an otherwise fulminating case, and should certainly be used.

6. Meningococci may persist in smears from the spinal fluid after they have failed to grow on suitable mediums; but even if they are absent in both tests, specific therapy should be continued until meningitic symptoms have disappeared.

EFFECT OF TYPHOID LIPOVACCINE IN INCREASING SUSCEPTIBILITY TO OTHER DISEASES

ANIMAL EXPERIMENTAL EVIDENCE *

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From time to time since the use of typhoid vaccine as a prophylactic in the control of typhoid fever, there have been objections on the part of medical officers to its use, the main one being that it predisposes the individual to infection with other diseases. The practical importance of such objections can readily be understood now that our army has reached its present proportions. This series of animal experiments was undertaken in an attempt to increase our knowledge

TABLE 1.—RESULTS OF SIX DAILY INOCULATIONS

Date 1918	Amt. Inoc. 24 Hr. Bouillon Culture C.c.	No. Inoc.	24 Hours		48 Hours		72 Hours		96 Hours		Per Cent. Dead	Per Cent. Lived
			D	L	D	L	D	L	D	L		
9/ 9	1/25	2	1	0	1	0	1	0	1	0	100	0
	1/50	2	1	1	1	0	1	0	1	0	100	0
	1/100	2	0	2	0	2	0	2	0	2	0	100
9/10	1/25	2	1	0	1	0	1	0	1	0	100*	0
	1/50	2	1	1	1	1	1	0	1	0	100	0
	1/100	2	0	2	0	2	0	2	0	2	0	100
9/11	1/25	2	1	0	1	0	1	0	1	0	100	0
	1/50	2	1	1	1	1	1	1	1	1	50	50
	1/100	2	0	2	0	2	0	2	0	2	0	100
9/12	1/25	2	1	0	1	0	1	0	1	0	100	0
	1/50	2	1	1	1	1	1	1	1	1	50	50
	1/100	2	0	2	0	2	0	2	0	2	0	100
9/13	1/25	2	1	0	1	0	1	0	1	0	100	0
	1/50	2	1	1	1	1	1	1	1	0	100	0
	1/100	2	0	2	0	2	0	2	0	2	0	100
9/14	1/25	2	1	0	1	0	1	0	1	0	100	0
	1/50	2	1	1	1	0	1	0	1	0	100	0
	1/100	2	0	2	0	2	0	2	0	2	0	100

* From the Department of Pathology, Army Medical School.

from the experimental side of the effect of typhoid vaccine in lowering the resistance to infection.

Because of the importance that *Streptococcus hemolyticus* infection assumed in the cantonments in 1917-1918, it was thought advisable to take the hemolytic streptococcus as the infecting agent. The strain (No. 23) used was one obtained from a case of empyema at Camp Merritt, N. J.

more practical to raise the virulence and then through subcultures over a considerable period of time establish a dosage of low virulence which would be fairly constant. This is what was done, and Table 1 gives the results obtained for a period of six daily inoculations.

The technic used in order to get a fairly constant growth was as follows: Plain bouillon, reaction + 0.3

TABLE 1.—RESULTS OF INOCULATIONS WITH STREPTOCOCCUS 23, OF LOW VIRULENCE

Lot No.	Amt. Typhoid Vaccine	Date	Lived	Died	Amt. Strep. Inoculated 24 Hr. Bouillon	No. Inoculated	Date	24 Hours D	24 Hours L	48 Hours D	48 Hours L	72 Hours D	72 Hours L	96 Hours D	96 Hours L	Per Cent. Died	Per Cent. Lived
1	½ c.c.	8/ 3	5	1	1/100 c.c.	5	8/22	0	5	3	2	3	2	3	2	40	40
2	½ c.c.	8/12	4	2	1/100 c.c.	4	8/22	0	4	1	3	1	3	1	3	50	75
3	½ c.c.	8/22	5	1	1/100 c.c.	5*	8/22	1	4	1	4	1	4	1	4	20	80
Controls.....		....	...	...	1/100 c.c.	6	8/22	0	6	1	5	2	2	2	2	50	50

* One sick.

TABLE 2.—RESULTS OF INOCULATIONS WITH STREPTOCOCCUS 23, OF LOW VIRULENCE

Lot No.	Amt. Typhoid Vaccine	Date	Lived	Died	Amt. Strep. Inoculated 24 Hr. Bouillon	No. Inoculated	Date	24 Hours D	24 Hours L	48 Hours D	48 Hours L	72 Hours D	72 Hours L	96 Hours D	96 Hours L	Per Cent. Died	Per Cent. Lived
1*	¼ c.c.	8/22	15	15	1/100 c.c.	12	8/31	0	12	6	6	7	5	7	5	58.3	41.7
2	½ c.c.	8/26	17	7	1/100 c.c.	12	8/31	1	11	2	10	2	10	3	10	16.6	83.4
3	¼ c.c.	8/30	15	9	1/100 c.c.	12	8/31	3	9	4	8	4	8	4	8	33.3	66.6
Controls.....		....	...	...	1/100 c.c.	12	8/31	3	9	4	8	4	8	4	8	33.3	66.6

* Small mice.

TABLE 4.—RESULTS OF INOCULATIONS WITH STREPTOCOCCUS 23, OF LOW VIRULENCE

Lot No.	Amt. Typhoid Vaccine	Date	Lived	Died	Amt. Strep. Inoculated 24 Hr. Bouillon	No. Inoculated	Date	24 Hours D	24 Hours L	48 Hours D	48 Hours L	72 Hours D	72 Hours L	Per Cent. Died	Per Cent. Lived
1	½ c.c.	9/ 9	20	16	1/100 c.c.	20	9/15	0	20	0	20	0	20	0	100
2	½ c.c.	9/12	21	5	1/100 c.c.	21*	9/15	0	21	1	20	2	19	8.5	91.5
3	½ c.c.	9/14	22	4	1/100 c.c.	20	9/15	0	20	0	20	0	20	0	100
Controls.....		....	...	...	1/100 c.c.	20	9/15	1	19	3	17	4	16	20	80
					1/50 c.c.	6	9/15	2	4	3	3	3	3	50	50

* One sick.

TABLE 5.—RESULTS OF INOCULATIONS WITH STREPTOCOCCUS 23, OF HIGH VIRULENCE

Lot No.	Date Typhoid Inoc.	Amt. Strept. Inoc. 24 Hr. Bouillon Culture	Date	No. Inoculated	24 Hours D	24 Hours L	48 Hours D	48 Hours L	72 Hours D	72 Hours L	96 Hours D	96 Hours L	Per Cent. Died	Per Cent. Lived
1	8/22	1/500,000 c.c.	8/31	3	1	2	2	1	2	1	2	1	66.6	33.3
2	8/26	1/500,000 c.c.	8/31	6	2	4	6	0	6	0	6	0	100	0
3	8/30	1/500,000 c.c.	8/31	3	1	2	3	0	3	0	3	0	100	0
Control	....	1/500,000 c.c.	8/31	3	2	1	3	0	3	0	3	0	100	0

TABLE 6.—RESULTS OF INOCULATION WITH STREPTOCOCCUS 23, OF HIGH VIRULENCE

Lot No.	Date Typhoid Inoc.	Amt. Strept. Inoc. 24 Hr. Bouillon Culture	Date	No. Inoculated	24 Hours D	24 Hours L	48 Hours D	48 Hours L	72 Hours D	72 Hours L	Per Cent. Died	Per Cent. Lived
1	9/ 9											
2	9/12	1/1,000,000 c.c.	9/15	5	1	4	3	2	3	2	40	40
		1/2,000,000 c.c.	9/15	5	0	5	1	4	1	4	20	80
3	9/14	1/1,000,000 c.c.	9/15	6	1	5	4	2	5	1	83.3	16.6
		1/2 000,000 c.c.	9/15	6	0	6	2	4	3	3	50	50
Control	....	1/1.000.000 c.c.	9/15	5	2	3	4	1	5	0	100	0
		1/2,000,000 c.c.	9/15	5	1	4	1	4	1	4	20	80

The animal chosen as the test animal was the mouse, because of its susceptibility to the streptococcus, as well as its availability in the numbers needed.

The first problem to be solved was to get a constant dosage of streptococcus that would kill the minority of the control animals inoculated. It is well known that streptococci can be made highly virulent for mice, i. e., 0.000001 c.c. of an eighteen hour broth culture will kill constantly, and that on subcultures this virulence is rapidly lost. Because of this fact it seemed to 0.5, was the medium used. A large number of tubes, each with 10 c.c. of bouillon, were prepared from a single lot of beef infusion, and this lot was used throughout the experiment. Subcultures were made daily by transferring one loopful of a twenty-four hour growth. Mice inoculations were made intraperitoneally with a bouillon dilution of a twenty-four hour bouillon growth.

From Table 1 it will be seen that the dosage which would show increased susceptibility best would be

0.01 c.c., and this was the dosage of low virulence adopted for the series of inoculations.

In order to get a broader view of the effect of typhoid vaccine on lowering the resistance, it was decided to have three series of mice, inoculated at intervals of several days, in each experiment.

Mice were inoculated subcutaneously with the standard triple typhoid lipovaccine used in all the camps. The dosage was sufficiently large to cause all the animals to be sick and quite a high proportion of them to die, the idea being to lower their resistance as much as possible. If proportionate dosage were given man it would amount to several hundred c.c., while the dosage actually given is only 1 c.c. Tables 2, 3 and 4 give the data and results of the experiments.

It is probable that under ordinary conditions it is the hemolytic streptococcus of relatively low virulence that is encountered in the camps. In those camps, however, in which more or less of an epidemic of streptococcus infection prevailed, the virulence of the streptococci probably was much increased.

With this in view, a part of the series of mice shown inoculated with typhoid vaccine in Tables 3 and 4 were inoculated with the same strain of streptococcus used for low virulence, which had been raised in virulence through mouse inoculation. Tables 5 and 6 give the data and results of these experiments.

COMMENT

In animal experiments, in which there are always uncontrollable factors to deal with, the only way any reliable results can be obtained is to repeat the experiment. If the same results are obtained consecutively, conclusions may then be fairly drawn. Results of the experiments as a whole should be considered rather than any individual portion, as there would be less chance of wrong deductions when the mass is considered. For example, in Table 3, comparing Series 1 with the controls, one could argue that there is increased susceptibility; comparing Series 2 and the controls, arguments for increased resistance could be brought forth; but taking the experiment as a whole, it will be found that there is practically no difference when Series 1, 2 and 3 are averaged against the controls; and this is without doubt more nearly the truth.

The number of typhoid vaccinated mice inoculated with low virulent streptococci were 111, of which twenty, or 18 per cent., died. Thirty-six control mice were inoculated with low virulent streptococci, of which ten, or 27.8 per cent, died. There is a difference here of 9.8 per cent. in favor of increased resistance to the streptococcus in the mice inoculated with typhoid vaccine. It may be possible, however, that the typhoid vaccine killed some of the mice most susceptible to the streptococcus and that this difference is more apparent than real.

Thirty-three typhoid vaccinated mice received inoculation of highly virulent streptococci, and of these twenty-two, or 66⅔ per cent., died. Thirteen control mice were inoculated, and nine, or 72 per cent., died. Here again there is a percentage in favor of increased resistance to the streptococcus, but it is possible that this difference may be more apparent than real.

There is one point, however, that may account for this apparent slight increase in resistance to the streptococcus. Following typhoid lipovaccination in man there is a moderate mobilization of leukocytes lasting for a few days. This undoubtedly occurs in animals, and it is generally thought that the leukocyte is the chief factor of defense against the streptococcus. Another point that would favor the view that an increased resistance to the streptococcus follows inoculation with typhoid vaccine (one form of foreign protein) is Jobling's contention that there is a general immune reaction following the introduction of foreign protein.

CONCLUSIONS

There is no evidence that there is increased susceptibility to streptococcus inoculation in mice following typhoid vaccination. There is a slight amount of evidence in favor of increased resistance to the streptococcus possibly due to the mobilization of the leukocytes. It is probable that these facts will be applicable to other vaccines and other diseases, for in a series of thirty-two mice vaccinated against pneumococcus, similar results have been obtained.

WAR NEUROSES, SHELL SHOCK AND NERVOUSNESS IN SOLDIERS*

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A recent visit to France and England furnished me with opportunities for observing the various phases of war neuroses, shell shock and nervousness in soldiers. In France the patients were seen at *triages*, or sorting stations, field and army, and base hospitals. Those seen in England gave as a rule longer histories and were satisfactorily separated from the front by a stretch of salt water. In both countries, facilities for studying the different methods of treatment and management were made freely available to me, and I also was able to profit by the views of medical officers of long experience in these matters. The present article is a summary of the impressions gained from this visit

IMPORTANCE OF NEUROLOGIC SUPERVISION

The neurologic problems of war have assumed an importance quite undreamed of, and the necessity of neurologists for a modern army is receiving general recognition. In battle areas the need of neuropsychiatry exceeds that of general medicine, as the nervous and mental casualties may exceed 10 per cent. of the total casualties. France maintains 20,000 neurologic beds in the rear, most of which are occupied by functional cases, and at the front tries to maintain one and one-half neurologic beds for each thousand troops. Major Arthur Hurst, R. A. M. C., estimates that 26,000 beds are occupied each year in Great Britain by purely hysterical patients. The previously held neurologic conception that hysterical paralysis and contractures did not occur in conjunction with physical wounds has been completely overthrown, as the war has demonstrated that functional disturbances of this character complicate surgical injuries with frequency. The longer the war goes on, the more it becomes evident how widespread are the effects of functional nervous disease both in combatant troops and in patients hospitalized for any cause.

* The cessation of hostilities and the proposed rapid demobilization of the Army have rendered many of the war time methods of the treatment of "shell shock" impracticable. This article should be read as of the time when it was written, that is, as of a time when no end of the war was in sight.

The web of mystery and vagueness that enveloped the entire shell shock group in the initial phases of the war has been swept away, and now there is an essential agreement of opinion that the great bulk of the cases are functional, that it is possible to prevent the occurrence of many of them, and that, even when of long standing and fully developed, they are curable. Actual experience has now shown that a substantial proportion of the nervous cases which appear at the front can be so managed that they do not run on into neurosis. The preventive measures are most sure of success in the battle areas, where they can be instituted almost immediately after the occurrence of the casualty. It is believed that from 80 to 90 per cent. of the patients of this class can be returned to the lines if they are promptly cared for in small neurologic units directly connected with the armies. The prevention of the cases that originate in the base hospitals is more difficult, but can be greatly furthered by a diagnostic alertness of medical officers on the lookout for the first manifestations of hysterical symptoms. It has also been proved that chronic, long standing cases, whether developed at the front or in base hospitals, can also be effectively cured, although the therapeutic arrangements for cases of this character are more elaborate.

It is thus seen that the outlook for the war neuroses is much brighter than it was. At one time it seemed impossible to stem the flood of these cases or to devise means of rehabilitating the patients. But in spite of this favorable change in the situation, shell shock still remains an actual as well as a potential problem for the medical department. Its potentiality can be held in check by efficient medical officers acting at the right time and place; but it will always be actual. There will always be many soldiers whose nervousness cannot be controlled at advanced points, either on account of the essential character of the nervousness itself or because, in the rush of warfare, it is impossible to carry out medical policies, desirable in themselves, but incompatible with the main object in hand.

In our army the task of the cure of the patients is difficult by reason of the sweeping application of the principle of compensation for disability. Article III, Section 300, W. R. I., Act of Oct. 6, 1917, as amended June 25, 1918, provides that officers and enlisted men or other members shall be taken to have been in sound condition when examined, accepted and enrolled for service, and thereafter entitled to compensation under the act for disability. Thus, as far as compensation is concerned, line of duty may be held to include all insanities, feeblemindedness, epilepsy, etc., irrespective of their having preexisted or not. Legally, no disorder can have preexisted in a person accepted for military service. As far as the neuroses are concerned, this law puts it beyond the power of medical officers to throw any doubts into the mind of the patient that he will surely be compensated if he persists in his neurosis long enough.

It is believed that the great success of the French with their neuroses is due to the fact that the neuroses are not pensionable and that no soldiers are discharged for such cause. The first factor is not available to us, but the second is; and for economic reasons alone every effort should be made to effect cures in neurotics, so that, even if they discontinue the service, they cannot claim disability on their return to civil life.

It was at one time thought that the doing away with the term "shell shock," with its implication of organic injury, which impresses the mind of the patient and the public alike, would help in the treatment. But it seems now as though the term had entered too deep into the language to be done away with. Efforts to offset the bad effects which the introduction of the expression brought with it will probably have to be expended in making it generally known that shell shock is an essentially curable condition.

CAUSATION

No entirely satisfactory explanation has been offered for the unprecedented frequency of these neuroses in this war. The great increase in the number and intensity of explosives does not altogether explain it, as they develop after gassing, after machine gun firing, and perhaps oftenest when there has been no direct exposure to firing at all. They develop in the base hospitals in France, and practically all of the symptoms quoted as war symptoms have been observed in the home cantonments during the training period. Neither does it seem probable that it is an entirely new development of this war, but rather that it existed in earlier wars in smaller numbers surely, and probably under a variety of names—in our Army, nostalgia, perhaps. Also in view of the fact that absenteeism as an idea has a foreplace in the minds of both officers and men whose sole reason for discharge is a war neurosis, it seems probable that among the 600,000 cases of absenteeism reported from the Union Army during the Civil War, an absenteeism which took the form of desertion or removal of patients from the medical services by friends or committees, there might have been found a numerous representation of modern shell shock.

The factor of predisposition is not to be denied in considering the causation of these conditions, but it is generally believed that it is sufficiently marked in most cases to have justified the rejection of the recruit.

With the exception of epilepsy, no single disease has been demonstrated as being an essential factor in causation. However, a diminished resistance may be inferred from the fact that the larger number of cases are observed during the first few months of service, although it must not be forgotten that there are a great many cases in which the soldier has not only given long service, but has also been distinguished for his morale and his bravery. It is not uncommon in French hospitals to see hysterical patients personally decorated and also wearing the *fourragère*.

Neuroses are credited with being more frequent in the infantry in common with other casualties, and also more common in trench warfare, although the latter has not been the case with our troops. The early impression that they were more common among officers has not been borne out by later experience. In a small proportion of the total number of cases the individual has been exposed to a traumatism severe enough to have caused lesions of the central nervous system without external wound. It is needless to state the uncertainty often surrounding the actual occurrence of injuries; but the injuries of the nervous system may be verified by definite signs. It is unfortunate that these relatively infrequent organic cases came to notice so early, as largely in consequence of them the idea became fixed that shell shock was an

organic condition and so to be regarded quite differently from those functional conditions that are the result of suggestion and are curable by psychotherapy. There has been reproduced what happened when the nervous effects of railway accidents first came into prominence. The new name, the new circumstances, the malassortment of diverse clinical conditions into one group, and the permitting of the group to carry the stigma of the most serious cases, which were the least frequent, the failure to recognize the material motive as a powerful provoking and sustaining motive —all these circumstances combine to make the history of shell shock a repetition of the history of railway spine.

On the factor of exhaustion too much emphasis can hardly be laid. The break is often preceded by weeks of disturbed sleep, due to bombing and artillery fire, and during an advance the story is common of several days of excessive exertion, nervous strain, no sleep at all, exposure to cold, only cold food and but little of that. The wish to be out of the war, which all along may have been latent, comes more to the surface when the shaken soldier staggers to or is brought to the first aid station or when he emerges from a period of unconsciousness. Under the influence of food, rest and encouragement, this imperfectly formulated wish may sink back of itself or may require additional efforts on the part of the medical officer to make it recede. This period, this interval, is one of greatly exaggerated susceptibility, and during it the most trivial circumstance may petrify the idea of illness, and a way out by means of it. But it is also a period when the kind, firm and confident attitude of the medical officer may completely reassure the shocked man as to his ability to carry on again and inspire in him the firm intention to do so.

CLINICAL VARIETIES

After the elimination of all totally foreign conditions, such as mental disease, organic nervous disease, and endocrinopathies, the war neuroses may be roughly divided into three general classes, between which occurs the same overlapping as is seen in the neuroses in civil life. These classes are: A, concussions; B, neuroses of neurasthenic or psychasthenic type, and C, hysteria.

A. *Concussions.*—These justify the assumption of the existence of minute and more or less disseminated lesions of the central nervous system, and may be accompanied by such symptoms as unconsciousness lasting for several days, retention of urine, loss of knee jerk, blood in spinal fluid, paraplegia, etc. Some patients of this class recover perfectly within a few weeks; others do not recover satisfactorily, and still others develop the symptoms of neurosis, illustrating the relationship between organic and functional disease.

B. *Neuroses of Neurasthenic or Psychasthenic Type.*—These may develop as a result of concussions, but as a rule their origin cannot be connected directly with any physical injury. They differ in no essential particulars from the neuroses of civil life except that they carry a strong coloring of the war situation. Many of them are associated with symptoms suggestive of endocrine disturbance, and the thyroid picture, especially in gas cases, is much in evidence. Thus, in addition to the symptoms of fatigue, lack of confidence, phobias, compulsions and general hyperesthesia are observed rapid pulse, cardiac irritability, pain over the heart, vomiting, and terrifying dreams with war content.

C. *Hysteria.*—Babinski's conception of hysteria as a condition produced by suggestion and curable by psychotherapy has been of inestimable practical value at this time, not only in showing the correct management of hysteria *en masse*, but also in bringing to the light the frequency with which hysteria lays its crippling hand on conditions not primarily neurologic. A brief historical retrospect may help to an understanding of this subject, which has gained so much in importance during this war.

The creation of hysteria as a clinical entity must be credited to Charcot. He assembled old observations and made new ones, and left the picture of a characteristic disease with a definite symptomatology. He recognized the essentially suggestible nature of hysterics, but he did not define the origin of the suggestions, nor did he indicate the means by which they might be avoided. His influence was enormous, extending to teachers and authors of all nationalities, so that at his death hysteria was accepted, practically all over the world, as he had fashioned it. But he showed no practical way out.

For the past twenty years Babinski has been destroying the disease which Charcot created, leaving more or less to one side the personality of hysterics. He has shown that the classic symptoms of hysteria are the results of suggestion originating in medical examinations, or from misapplied medical or surgical treatment. As a proof of the correctness of his view, it is stated that the "grande hystérie" of the Salpêrière has now practically disappeared from the French clinics.

Babinski, like his illustrious predecessor, has exercised a great influence on the medical profession of France, and at the outbreak of the war it had practically adopted his view on hysteria. The advantage to France from this was that its medical officers were from the first in a position to realize how hysterical symptoms arise and how they can be cured.

Among the symptoms that may be mentioned as being produced by suggestion are deafness, blindness, mutism and deaf-mutism, tremors, contractures and paralyses. Some few of these, such as deafness and mutism, which are so closely connected in consciousness with states of terror and in which the original insult is in itself a powerful suggesting factor, come on immediately; but the development of the larger number is delayed for days or weeks during the period when the patients are particularly suggestible and are exposed to the suggestions of medical men who examine them, and to the suggesting example of other sick and wounded. It is at this period particularly that the wisdom and discretion of medical officers can accomplish so much in suppressing the tendencies to the development of disabling symptoms.

A particularly interesting condition, which has first received detailed attention during this war, is a peculiar form of contracture affecting arms and legs, especially the feet and hands, which develops in sequence to some minor surgical injury. In these cases, various trophic disturbances are added to the functional incapacity. The exact pathologic condition in these cases is still not clear, but most of the patients are curable under carefully prepared psychotherapy.

TREATMENT AND MANAGEMENT

General Considerations.—The importance of a definite understanding as to discharge and compensation has already been emphasized. If the contrary to what is known to be wise maintains, if it is accepted throughout the Army that functional nervous disease is a grave disability which, if persisted in long enough, will insure a separation from the service under favorable pension conditions, the task of medical officers will become exceedingly difficult; not only will they miss an effective argument in influencing the minds of their patients, but they themselves will be affected by the atmosphere which tends to foster invalidism and make it comfortable. Except at the very beginning, except during the period of suggestibility before symptoms of neurosis have shown themselves, the hospital atmosphere should not be made too attractive for these patients. The attitude of medical officers should be that they are there for the express purpose of ridding the patient of his neurosis and firmly intend to do it, and the hospital itself should be organized along lines of strict war discipline. A war neurosis is a personal reaction to a military situation, and it must be cured in terms of the situation. It is an infantile reaction, and the medical officer must call to his aid some of the resources of the schoolmaster. A hope of reward should spur on the patient who lends himself readily to treatment and does well, and there should be some suggestion of punishment for those who are refractory and who tend to relapse.

In the advanced French centers the patients, even those who have been subjected to violent concussions, are told that they will soon be well again, and that the furlough, to which every French patient discharged from hospital is entitled, will make their cure perfect. If, however, the patient does not respond to encouragement of this kind, a different tone is adopted, and he is told that patients who develop nervous symptoms get no furlough. It is difficult to be specific in these matters or to lay down general rules, but the general rule is that the longer the patient persists in keeping on the road that leads to neurosis the more uncomfortable he will find it. It would be well if every one could grasp this view of the matter and could realize that the more discipline is relaxed, the more the patients are permitted to believe that they are suffering from serious disorders, the more of them will be found in soldiers' homes after the war. Such public utterances as that of a member of parliament to the effect that no soldier who had suffered from this terrible affliction should ever be asked to bear arms in France again injures the morale of troops and tends to postpone recovery in patients who under proper conditions might soon be well.

The whole difficult subject of discipline receives a certain illumination from a consideration of a system of management employed at certain French centers and known under the name of *torpillage*. Torpillage consists in the brusque application of galvanic currents, strong enough to be extremely painful, in hysterical conditions, and the continuance of the procedure to the point at which the deaf hear, the dumb speak, or those who believe themselves incapable of moving certain groups of muscles are moving them freely. The method has proved highly effective, and requires but little time and practically no personnel except the medical officer who applies the treatment and the noncommissioned officer who takes the patient at the end of the treatment and continues the exercise of the affected parts. One treatment suffices. The apparatus is of the simplest, the only accessory to the electric supply and the electrodes consisting of an overhead trolley which carries the long connecting wires the whole length of the room, thus making the patient unable to run away from the current which is destined to cure him.

This method is more cruel in appearance than in fact, as the contacts are brief and only a few are necessary. What it really consists in is giving authority to a medical officer to inflict pain on a patient up to the point at which the patient yields up his neurosis. Its unquestioned effectiveness carries a lesson which makes plain that under circumstances a military neurosis disappears under punishment. It substantiates what was previously said in reference to rewards and punishment. As far as punishment is concerned, it should never be presented to the patient as such. It should rather be explained to him as a certain form of treatment which is of necessity not agreeable. The most feasible means for the carrying out of this idea is isolation. All of the French centers have isolating rooms, locked on the outside, into which refractory patients are placed and shut off from companionship, reading and writing materials and tobacco, until such time as they show themselves amenable to treatment. Rooms of this kind are especially necessary and effective in the management of relapses. As a matter of practical fact, the knowledge that isolating rooms are on hand and available is usually all that is necessary. They are not often used, and in one center they were found given over to the lodgment of attendants. But the underlying idea should make plain that a stubborn war neurosis is cured by the physician's mastering the patient. In many, but not in all, patients, persuasive measures are sufficient; but when they fail, disciplinary measures should be made available; and the very knowledge that they are available will render it rarely necessary to make use of them. It seems probable that the reason so little of this variety of persuasion can be made use of with officers is that the treatment of neuroses in officers is generally difficult.

At the Front.—The general plan of the treatment of these cases at the front has already been given. Nothing further need be added here except to report that Lieut.-Col. T. W. Salmon, senior consultant in neuropsychiatry, American Expeditionary Forces, has perfected and made operative comprehensive plans for the early treatment, in direct connection with the armies, which have worked great good to our troops.

In Base Sections.—If rehabilitation of the nervous soldier fails at the front, cure is inevitably delayed. During the days or weeks of his being transferred from one hospital to another, he not only fails to receive appropriate treatment, but is exposed to the suggestions of illness which deepen the roots of a beginning neurosis. In all bases treatment is slower and less certain of effecting a return to the fighting line. It has been shown to be necessary to have hospitals specially organized as to personnel, general equipment and surroundings. If such hospitals are located in France, it is still possible in fairly recent cases to return patients to their original duty after a few weeks of treatment.

If, however, the patients are returned overseas, the chances of returning them to foreign service again are not good. With soldiers of this class returned home, England enters into a kind of agreement or understanding that they shall not be ordered to France again for a period of six months. Practically it amounts to an understanding that they shall not go to France again for the period of the war. But even if soldiers suffering from the neuroses are not expected to rejoin their expeditionary comrades, once they have reached home there nevertheless should be no relaxation of the principles of management in the home hospitals. The same principles hold good that the most humane thing for nervous soldiers is to hold them in the military service until they are cured. At home it may be expected at least to reestablish them sufficiently to enable them to do some work useful to the army during the war, so that the end of the war will find them able to resume their civil occupations.

It is to be the policy of the medical department of the American Expeditionary Forces to retain all the patients of this class in France as far as possible. But it cannot retain all of them in France, and sufficient numbers of them will be returned to necessitate the establishment of one or more special hospitals in this country, which should be organized with great care. They should be remote from large cities and situated in a locality of which the climate will permit outdoor occupation for the greater part of the year. One thousand beds is the limit of size, as the atmosphere of cure, which they must have, is difficult to maintain in larger units.

Whenever it is possible, the commissioned personnel should have had expeditionary experience, as an actual knowledge of conditions in France will strengthen the influence of medical officers over their patients. Men or women nurses may be employed, but should be selected with special reference to their attitude toward the patients which facilitates cure. The patients should be kept as constantly occupied as possible, and the occupations (indoors) should be of useful character, such as basket making, tailoring, shoemaking, typewriting and carpentry. Agriculture is the best outdoor occupation. Occupations are to be considered as an essential part of the treatment; in addition to their moral benefit, they aid in restoring facility to parts that have been paralyzed or the seat of contractures. Physiotherapy should be instituted with the same end in view. Setting up exercises are to be carried out by an experienced noncommissioned officer, and ladders, steps, bars, walking floors, etc., are to be arranged to overcome the effects of any local disabilities.

The principle behind all the procedures of physiotherapy should be that the patient is made to do them for himself as quickly as possible. He should be put on his own initiative, and overseen rather than watched. Massage, electricity and hydrotherapy have little part in the treatment. Massage has a place in case of atrophy, but as a general practice it is opposed to the main principle, which is that the patient is to prove to himself that he can do the things which he thought he could not do. Massage is opposed to that principle.

The classification of cases, to be made in the receiving ward, is extremely important. Neurasthenics and psychasthenics should be separated from the patients with local hysterical symptoms, as the methods for these two classes is different. Also, at the time of reception, an effort should be made to ascertain the general morale of the patient. Many show evidences of ill nature and resentment and come to the hospital with their minds made up that they will not be cured. Such are usually easy of identification, most betraying their intentions by malicious glances of the eye. If allowed to associate freely with well intentioned patients they are apt to corrupt the general morale of the ward.

As far as the treatment of the cases of actual concussion which have developed into neurosis, and the neurasthenic and psychasthenic cases are concerned, there is little new to be said. The treatment is that of the psychoneuroses in general with special reference to the military situation. Among the symptoms common to this class are insomnia, war dreams, vomiting, pains in the head and precordial pains. Stammering is often found in this class, and is reported as difficult to deal with. Cases with hysterical manifestations, such as aphonia, coarse tremors, paralysis and contractures require quite a different management. Such patients are to be given to understand, on reaching the hospital, if possible before reaching the hospital, that they have come there to be *cured*, and that they certainly will be cured at one sitting. This is the great practical demonstration of the war in psychotherapy, that hysterical conditions can be cured almost instantaneously, when proper arrangements have been made, even if the condition has lasted for years. The idea of a cure, of a crisis, seems to be the crux of the matter. It does away with the hospital idea of "care and treatment," and fixes a definite moment when the crippling effects of illness will disappear as quickly as though they had been cut away with a knife. The more completely the preparations are carried out to make the idea forceful, the more certain will the effects be.

There must be some air of magic about the performance. Examinations at this point are better brief, and if the diagnosis has already been established, would better be omitted altogether. Often the patients have already been examined too much. Elaborate history taking is also superfluous, as an intimate knowledge of the patient's case is not necessary before the cure, and is better obtained during conversations while the cure is being effected. The cure itself is effected by means of suggestion and persuasion, various methods being employed with equal success by different operators.

In all, with the exception of *torpillage*, the patient is put at his ease, assured that he will suffer no pain, made to relax, and in some way or other made to move the part that is paralyzed or contracted, made to speak, to hear, to cease tremors. Most operators avail themselves of a mild faradic battery to emphasize their suggestions; others use no artificial means at all. The time required for the cure varies from a few minutes to a few hours to all day and night. The principle is that once the physician has shut himself up with the patient he shall not leave him until the object is achieved.

PREPARATORY SUPERVISION AND AFTER-TREATMENT

Quite as essential as the cure itself is the period that precedes it and the period that follows it.

The first, the period of preparation, should be utilized to prepare the patient's mind for a favorable reception of the suggestions that are to cure him. With this end in view he is not treated immediately on arrival at the hospital, but is made to wait several days during which nurses, attendants and patients who have been cured tell him of the certainty of cure and its painlessness. In the treatment room of the Salins hospital there is a large pile of canes, crutches and orthopedic apparatus that have been discarded by cured patients, a pile well calculated to strengthen the faith of the doubting.

The period after the cure is devoted to careful supervision of the patient to the end that he keeps doing the things which a short time before he thought himself unable to do. A sharp lookout should be kept for relapses, and relapses should be dealt with with promptness and firmness. Military drills should be begun as quickly as possible, but the most satisfactory arrangement for a postgraduate course is a special training camp under the command of a line officer. Under present regulations a patient discharged from a hospital goes to a replacement depot without having been tried out under service conditions. But neurotics are too uncertain equations to be passed on without having first proved themselves. Unless fortified by an actual trial of the capacities of the patient, the decisions of classifying boards are apt to be erroneous.

Some explanation must be given as to the significance of cures and relapses. Cure means the disappearance of the symptoms that were created by suggestion and made to disappear by psychotherapy. Cure removes what was produced by a situation without any particular attempt to determine the mechanism of the production. It is quick and pragmatic and adapted to be applied to large numbers, as opposed to being time-consuming and analytic and individualistic. Those who favor the analytic school of mental medicine will doubtless deny, and with some reason, that the disappearance of one or more hysterical symptoms is proof of the cure of the patient. But to this may be answered that the cure of the patient begins with the removal of the obstacle that immediately prevented him from performing his duties. If, on such a removal, he is able to resume duties that tend to build up character quite as much as the explanations furnished by psychanalysis, he may be said to be practically cured.

The fact is that many patients treated in this way are able to carry on again. Roussy of Salins sends a goodly proportion of his patients back to the line in spite of the fact that most of them have been crippled for months or years. He is aided greatly by the training camp and also by the authority given him of recommending a change of service when he considers such a change necessary. For example, he often returns infantrymen to the artillery.

Relapses consist in a return of the symptoms in a patient once cured. The tendency to them is common, especially when the patient is removed from the care of the medical officer who effected the cure. Patients relapsing should be returned as soon as possible to the place of the original treatment, to the same medical officer, and as relapses are indicative of a bad morale on the part of the patient, of an unwillingness to profit by what he has learned, strict and if necessary disciplinary measures should be used.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

BENZYL BENZOATE.—Benzylis Benzoas.—$C_6H_5COO.C_6H_5CH_2$.—The benzyl alcohol ester of benzoic acid. It contains not less than 95 per cent. benzyl benzoate.

Actions and Uses.—Benzyl benzoate lowers the tone of unstriped muscle, and has been suggested as a remedy against renal, biliary, uterine, and intestinal colic and other spasms of smooth muscle, including angiospasm. Its clinical use is still in the experimental stage.

Dosage.—0.3 to 0.5 Cc. (5 to 7 minims).

Benzyl benzoate is a colorless oily liquid above about 20 C. It is odorless, or has a faint aromatic odor, and a sharp burning taste. It is insoluble in water or glycerin but miscible in all proportions with alcohol, chloroform and ether.

Benzyl benzoate boils at 340 to 350 C. with partial decomposition. When ignited it burns with a very smoky flame.

Specific gravity 1.09 to 1.13 at 15 C., 1.083 to 1.122 at 25 C.

Benzyl benzoate is neutral to litmus. It is readily saponified by alcoholic solution of potassium hydroxide. The solution obtained when neutralized yields a flesh-colored precipitate with ferric chloride solution, and upon acidulation a white crystalline precipitate of benzoic acid separates. This precipitate may be identified by extracting with ether and applying the usual tests for benzoic acid.

Ten Cc. benzyl benzoate should leave no weighable residue upon evaporation and heating until all carbon is burned away. To about 2 Gm. benzyl benzoate, accurately weighed, add 25 Cc. half-normal alcoholic potassium hydroxide solution and heat the mixture to incipient boiling under a reflux condenser for one hour. To the cooled solution add phenolphthalein and titrate the excess potassium hydroxide with half-normal hydrochloric acid. The volume of half-normal potassium hydroxide used should indicate not less than 95 per cent. benzyl benzoate (each Gm. benzyl benzoate requires for saponification not less than 8.9 Cc. or more than 9.4 Cc. half-normal alcoholic potassium hydroxide solution).

Benzyl Benzoate-H. W. and D.—A non-proprietary brand of benzyl benzoate complying with the tests and standards for benzyl benzoate.

Manufactured by Hynson, Westcott and Dunning, Baltimore, Md.

Solution of Benzyl Benzoate, Miscible-H. W. and D.—A solution of 20 Gm. benzyl benzoate in 78 Gm. ethyl alcohol to which is added 2 Gm. of powdered castile soap as an emulsifying agent.

Actions and Uses.—Same as benzyl benzoate.

Dosage.—1.5 to 2 Cc. (20 to 30 minims).

BARBITAL.—Diethyl-barbituric Acid.—Acidum Diaethyl-Barbituricum.—Diethyl Malonyl Urea.—Malo-Urea.—2,4,6,-trioxy-5-diethyl pyrimidin, $CO(NH\text{-}CO)_2C(C_2H_5)_2$. First introduced as veronal.

Actions, Uses, Dosage, Physical and Chemical Properties.—See New and Nonofficial Remedies, 1918, p. 95.

Diethylbarbituric Acid-Merck.—A brand of barbital complying with the N. N. R. standards.

Merck & Co., New York, distributors.

Diethylbarbituric Acid-Merck Tablets, 5 grains.—Each tablet contains diethylbarbituric acid-Merck, 5 grains.

BARBITAL SODIUM.—Sodium Diethyl-Barbiturate.—Sodii Diaethylbarbituras.—$Na(C_8H_{11}O_3N_2)$.—The monosodium salt of barbital (diethyl-barbituric acid).

Actions, Uses, Dosage, Physical and Chemical Properties.—See New and Nonofficial Remedies, 1918, p. 96.

Sodium Diethylbarbituric Acid-Merck.—A brand of barbital sodium complying with the N. N. R. standards.

Merck & Co., New York, distributors.

Sodium Diethylbarbituric Acid-Merck Tablets, 5 grains.—Each tablet contains sodium diethylbarbituric acid-Merck, 5 grains.

Fat Embolism as Factor in Traumatic Shock.—According to an abstract in the *Nederlandsch Tijdschrift*, H. Siegmund has reported that he found evidences of fat embolism in the lungs at necropsy after wounds with much shattering of bone or injury to soft parts. When there had been phenomena of shock, the fat embolism was the most pronounced and extensive, amply sufficient to explain the fatal outcome. In the prolonged cases the fat embolism involved the brain or was general.

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SATURDAY, DECEMBER 28, 1918

The year 1918 has gone: a year momentous as the termination of the most cruel war in the annals of the human race; a year which marked the end, at least for a time, of man's destruction of man; unfortunately a year in which developed a most fatal infectious disease causing the death of hundreds of thousands of human beings. Medical science for four and one-half years devoted itself to putting men on the firing line and keeping them there. Now it must turn with its whole might to combating the greatest enemy of all—infectious diseases. In this battle there must be no armistice; no peace without victory. Here's wishing every member of The Journal family continuous courage in the glorious struggle, with victory succeeding victory, and to all a Happy and Prosperous New Year.

IS INFLUENZA DUE TO A FILTRABLE VIRUS?

The primary cause of influenza, in accordance with the facts as we now have them, is an unknown agent that prepares the way for secondary infections of the respiratory tract. Is this unknown agent a filtrable virus? The results of experiments just reported to the Academy of Sciences at Paris appear to indicate that it is. Nicolle and Le Bailly[1] inoculated monkeys (*M. cynomolgus*) with the bronchial secretions of patients in the early stages of typical influenza. One monkey, which received the unfiltered secretions under the conjunctiva near the papilla and into the nose, came down on the sixth day with a fever that lasted three days. The same secretion, diluted ten times with salt solution and filtered through a Chamberland candle (L 2) under a pressure of from 30 to 40 cm. of mercury, was injected subcutaneously into a healthy man, who fell sick on the sixth day with headache and general malaise, conjunctival injection and moderate fever, recovering after five or six days. The filtered material was also injected intravenously into a second person, but he remained well. Cultures of the filtrate remained sterile, showing that it was free from ordinary bacteria. A healthy man was injected subcutaneously with 3 c.c. of the blood of the monkey taken on the first day of the fever, but without any results. In another experiment, 3 c.c. of blood drawn on the second day of the characteristic attack of influenza were injected into a vein of a healthy person without any apparent result. Again, bronchial secretion obtained on the third day of the attack from a man suffering with influenza was injected under the conjunctiva and placed on the nasal mucous membrane of a monkey, and on the fifth day the animal developed a fever that lasted three days; after filtration the material was injected under the skin of a healthy person, who became ill on the sixth day with the symptoms of a mild attack of influenza. Intravenous injection of the filtrate into a healthy man produced no result. That the persons who came down with symptoms of influenza after having been inoculated subcutaneously with these filtrates did not suffer from the natural disease is indicated by the fact that they occupied particular quarters with other persons, none of whom became sick, and also because none of these inoculated became sick subsequently. From their results, Nicolle and Le Bailly conclude that the bronchial secretion in the acute period of influenza is virulent; that the monkey is susceptible to the virus by way of the subconjunctival tissues and the nasal mucosa, and that the virus is filtrable because sterile filtrate injected subcutaneously seemed to produce the disease in two persons. They failed to produce the disease by intravenous inoculations, which might be interpreted to mean that the virus does not survive in the blood.

However, an experiment reported by Dugarric de la Rivière[2] seems to show that the virus may be present in the blood. He mixed the blood from four persons who were severely ill with influenza, passed it through a Chamberland candle (L 3), and besides injecting rabbits, injected himself under the skin with 4 c.c. of the filtered blood. Nothing further is said at this time concerning the injections of the rabbits. Concerning the experiment on himself, however, he reports that there was no local reaction, but that on the third and fourth days after the injection he had marked frontal headache, pain in the neck and back, chilly sensations and weakness, and a temperature running between 37.8 and 38.2 C. (100.04 and 100.76 F.); on the fifth day the symptoms subsided except for some weakness and also some intermittent precordial pain and irregularity of the pulse. On the tenth day he swabbed his throat and nose thoroughly with a filtrate of an emulsion of influenza sputum in salt solution, but this was not followed by the development of any symptoms.

1. Nicolle, Charles, and Le Bailly, Charles: Quelques notions expérimentales sur le virus de la grippe, Compt. rend. Acad. d. sc., 1918, 167, 607.

2. Dugarric de la Rivière, R.: La grippe, est-elle une maladie à virus filtrant? Compt. rend. Acad. d. sc., 1918, 167, 606.

The results of the work of these French investigators are, of course, most interesting and suggestive as indicating that this disease is caused by a filtrable virus. However, in view of the small number of experiments and the fact that the spontaneous development of influenza cannot be entirely excluded, they can hardly be accepted as demonstrating conclusively that influenza is caused by a filtrable virus. The reports of further investigations must be awaited.

GOITER PROPHYLAXIS IN SCHOOLGIRLS

The high incidence of simple goiter in various regions of the United States as well as in other parts of the world is beginning to be appreciated. Since goiter develops particularly during the adolescent period, the most valuable and accurate data as to its occurrence can probably be obtained from the examination of the public school population. Only beginnings have been undertaken in this direction; but the widespread employment of school physicians and the introduction of modern methods of school medical inspection and personal prophylaxis will make a vigorous attack on the goiter problem more promising in the near future. In a complete census of the condition of the thyroid gland in the girls from the fifth to the twelfth grades of the school population of a large community in the Great Lakes goiter district, it was found that 1,688, or 43.59 per cent., had normal thyroids; 2,184, or 56.41 per cent., had enlarged thyroids, and 594, or 13.4 per cent., had well-defined, persistent thyroglossal stalks. The community lies near the southern edge of the goiter district, and it is suggested that communities near the lakes would show a higher incidence. This demonstration of the extent of goiter occurrence, the outcome of a study made under the auspices of the Committee on Therapeutic Research of the Council on Pharmacy and Chemistry of the American Medical Association by Marine and Kimball[1] of Cleveland, ought to pave the way for successful therapy on a large scale.

If we accept the dictum of the Cleveland investigators that "simple goiter is probably the easiest of all known diseases to prevent," it follows that efforts to undertake prophylactic work should be initiated without delay. To offset the possible hesitation of the want-to-be-shown members of the profession, an actual therapeutic demonstration on a large scale has already been carried to a point at which the results achieved are both striking and convincing.[2] For the prophylactic treatment, sodium iodid was selected on the grounds of economy and ease of administration. The thyroid gland has an extraordinary affinity for iodin; and an exceedingly small amount of this element suffices, as numerous experiments have clearly demonstrated, to protect a gland against hyperplasia even under conditions in which such a development would otherwise be a characteristic compensatory response to thyroidal deficiencies. In their large project at Akron, Ohio, where Marine and Kimball made the survey of the incidence and the types of thyroid enlargement in the schoolgirls from the fifth to the twelfth grades, inclusive, the dose of iodid selected was small in comparison with customary iodin therapy, but large in contrast with what animal experiments suggest as needful. The evidence indicates that from 25 to 30 mg. "saturate" the normal thyroid of from 20 to 25 gm. (⅔ to 1 ounce). Marine and Kimball arbitrarily selected the employment of 2 gm. of sodium iodid, given in 0.2 gm. doses each school day, for each pupil in the fifth, sixth, seventh and eighth grades; and 4 gm. in 0.4 gm. doses each school day for each pupil in the ninth, tenth, eleventh and twelfth grades. These amounts of the drug were given in May, 1917, at the schools by the teachers or nurses.

A complete reexamination of all girls from the fifth to the twelfth grades was made six months later. The summarized results[2] show that not a single pupil in whom the thyroid was normal at first and who took iodin showed any enlargement, while of those not taking iodin, 26 per cent. showed definitely enlarged thyroids, and some, moderately large goiters. Even more than a prophylactic action is shown in the results: Just one third of the goiters marked "small goiters" disappeared; and one third of those marked "moderate goiters" showed a decrease of 2 cm. or more. Accordingly, the investigators properly remark, a distinct therapeutic effect is clearly demonstrated.

These statistical findings are the more conclusive because they represent not dozens but hundreds of carefully examined cases. More than a thousand girls took the full treatment, the latter being restricted for the present to this sex because during the adolescent period simple goiter occurs about six times more frequently in girls than in boys. The iodid rash prophesied by some critics failed to materialize in any noticeable way in more than five girls, in whom it was transitory and uneventful, promptly clearing up when the treatment was stopped. The investigators also now give assurance that there is no danger of producing a toxic condition like exophthalmic goiter. Not a single symptom of this alleged danger from the use of iodids was encountered. Nor was anything different to be expected; for, as Marine and Kimball remind us, the risk of inducing manifestations of exophthalmic goiter from the use of iodin in physiologic doses is exceedingly small, even in those cases in which there were large hyperplastic thyroids, that is, the kind of thyroid enlargement that would permit of the most rapid formation and excretion of the iodin-

1. Marine, David, and Kimball, O. P.: The Prevention of Simple Goiter in Man, Jour. Lab. and Clin. Med., 1917, 3, 40.
2. Kimball, O. P., and Marine, David: The Prevention of Simple Goiter in Man, Arch. Int. Med., July, 1918, p. 41.

containing hormone. The extent to which iodids are used in general medicine and surgery and the rarity of the development of signs of exophthalmic goiter is the best index of the danger. Iodin is usually employed in immensely large doses; from 0.2 to 0.4 gm. of sodium iodid daily for two weeks would offer a great excess over the amounts necessary to saturate even the largest thyroids, and probably much smaller amounts would suffice in man, as it has been proved to do in the lower animals. The Akron experiment is being continued on an even larger scale. It should serve both as a model and as a stimulus for comparable efforts elsewhere.

ANTISCORBUTICS

The justification for a careful consideration of the subject of antiscorbutic agents is presented by the recent studies of experimental scurvy.[1] McCollum[2] remarked recently in a symposium on diseases due to deficiencies in nutrition:

> Recovery from scurvy following a change of diet, or an improvement of the bacteriologic condition of the food, or following the administration of substances having diuretic properties, may be more satisfactorily explained in other ways than by the assumption that such changes in the dietary regimen produce their effects because of the introduction of a hypothetic antiscorbutic substance. It is necessary, henceforth, that those who discuss the etiology of scurvy should take into consideration the results of recent researches in nutrition with simplified diets. Whoever would seek to establish the validity of the theory of the existence of a specific antiscorbutic substance should first furnish new explanations for the experimental results that are not in harmony with the antiscorbutic theory, rather than present new experiments that harmonize with this most attractive hypothesis.

Nevertheless, at the present moment—and who can foretell the future in these days of enormous progress in the knowledge of the science of nutrition—it seems clear from the available evidence[1] that certain species at least may show scorbutic symptoms despite the fact that they are on a regimen that seems to meet the requirements of present-day investigators. For example, both Cohen and Mendel[3] at Yale, and Hess and Unger[4] at the Department of Health in New York, have recently demonstrated the genesis of disease in guinea-pigs abundantly supplied with food that contained admittedly good protein, a liberal variety of inorganic salts, supplements of sources of the recognized "fat-soluble" and "water-soluble" vitamins, and the roughage to regulate the movement of the bowels.

Small additions of raw milk do not prevent the onset of scurvy. Larger quantities cause the symptoms to disappear. But the long recognized source of antiscorbutics is found in the fresh fruits and vegetables. Precisely how their potency manifests itself need not concern us here. The fact that scurvy has not only a civil but also a military significance at this time is of itself enough occasion to search for dietary possibilities that will assist in averting or curing the disease. When we are told by competent observers that prunes and bananas are not antiscorbutic, whereas oranges and cabbages are markedly effective, it becomes clear that no broad generalizations can be made, nor can haphazard choice be expected to lead to antiscorbutic dietary success. Assuredly there is need, as Hess remarks, not only of an exact inventory of antiscorbutic foodstuffs, such as has been recently undertaken by the Lister Institute in London,[5] but also of efforts directed to enlarge their number.

Even this plan now seems inadequate to meet the current situation. The movement toward conservation of foods, particularly exemplified in the drying and preserving of fruits and vegetables, is likely to be an extensive one. Do these foods thus conserved retain their antiscorbutic potency? According to Hess and Unger,[4] commercial dehydrated carrots retain practically no antiscorbutic virtues. This statement is in accord with the findings of various European experimenters. Cohen and Mendel have modified the general statement by indicating that cabbage, which is markedly antiscorbutic, apparently may be dried so as to retain some, at least, of its potency. Even orange juice, the antiscorbutic *par excellence*, has been found to lose some of its power when allowed to age for some months in a refrigerator; and the "artificial orange juice" of salts, sugar and citric acid, as proposed by McCollum, is said to fail to protect against scurvy.[4] From a practical standpoint, in the face of high prices for foods, it seems worth while to reemphasize Hess' discovery that orange peel possesses marked antiscorbutic potency and withstands desiccation remarkably well, retaining considerable of this power after being dried for three months.

Some day, we may confidently expect to discover some order in the apparent chaos of this subject. Meanwhile the safety of large groups of the human race demands accurate information on matters that seem to offer at best crudely empiric knowledge. To say that any food lacks antiscorbutic potency is not to condemn it or exclude it from the dietary. The foremost warning is, not to make our rations too exclusive in character, not to depend as yet solely on dried or preserved products, but rather to include some fresh foods as far as circumstances permit—until the experts either improve the methods of conservation so as to retain antiscorbutic potency in them or give us a guide to physiologic safey in our dietary choices.

1. The Nonidentity of Antineuritic and Antiscorbutic Factors in Nutrition, editorial, THE JOURNAL A. M. A., Nov. 30, 1918, p. 1826; Scurvy and Antiscorbutics, Dec. 14, 1918, p. 2000; Scurvy and Constipation, Dec. 21, 1918, p. 2075.
2. McCollum, E. V.: The "Vitamin" Hypothesis and the Diseases Referable to Faulty Diet, THE JOURNAL A. M. A., Sept. 21, 1918, p. 937.
3. Cohen, B., and Mendel, L. B.: Experimental Scurvy of the Guinea-Pig in Relation to the Diet, Jour. Biol. Chem., 1918, **35**, 425.
4. Hess, A. F., and Unger L. J.: The Scurvy of Guinea-Pigs, II, Experiments on the Effect of the Addition of Fruits and Vegetables to the Dietary, Jour. Biol. Chem., 1918, **35**, 487.
5. Chick, T., and Hume, M.: Tr. Soc. Trop. Med. and Hyg., 1917, **10**, 141.

Current Comment

LEST YOU FORGET

Last week opportunity was given to Fellows of the Association and to subscribers to remit annual dues and subscription, using a blue slip inserted in THE JOURNAL. Many, desirous to aid the Association in effecting a great saving in the sending of regular bills, have already responded. It is hoped that many more will require no further reminder to act. Lest you forget we say it yet: Use the Blue Slip.

THE NUTRITIVE VALUE OF THE BANANA

A prominent organization for conserving the health of the less well-to-do classes has adopted the dictum, "Spend not more for meat and eggs together than for vegetables and fruits."[1] The part that meat and eggs play in the dietary is well known. They offer proteins and fats in acceptable form, and the egg furnishes a quota of vitamins in addition. The grouping of vegetables and fruits in a promiscuous way may tend to obscure the great differences that exist between the different, highly unlike classes of such plant products. Roots, tubers, stalks, green leaves and fruits proper are too diverse in their botanic morphology as well as their chemical make-up to receive indiscriminate consideration in the eyes of the dietitian. All of the products mentioned may provide pleasant and varied flavors and may give desirable texture or bulk to the diet. Some of them undoubtedly furnish vitamins, though it must be admitted that our knowledge of the distribution of these factors is still most fragmentary. As a rule, however, they supply acceptable carbohydrates in the form of starch and sugars. Thanks to the more recent methods of physiologic investigation of dietary values, a new physiology of foods is being created. This has emancipated the student of nutrition from the generalities of former days and enabled him to form more useful conceptions of the specific values of individual products. Numerous instances of what this mode of examination may reveal have been detailed from time to time in THE JOURNAL. An added illustration is afforded by the recent studies of the nutritive value of the banana by Sugiura and Benedict.[2] They refute the assumption that a population can subsist exclusively on bananas as food.[3] These fruits are now definitely demonstrated to be deficient in protein and the water-soluble accessory as a food for the growth and maintenance of experimental animals. The lacking factors must be supplied before a complete dietary results. These shortcomings need not detract, however, from the other nutrient virtue of this sterile fruit.[4] It remains a delicious and digestible sugary food even if it lacks all the virtues of an ideal product like milk.

1. Food and the War, a textbook prepared under the direction of the Collegiate Section of the U. S. Food Administration, Boston, Houghton, Mifflin Company, 1918, p. 203.
2. Sugiura, K., and Benedict, S. R.: The Nutritive Value of the Banana, Jour. Biol. Chem., 1918, 36, 171.
3. Adams, F. V.: Conquest of the Tropics, 1914, p. 538.
4. The Undervalued Banana, editorial, THE JOURNAL A. M. A., Jan. 27, 1912, p. 276. Prescott, S. C.: Scient. Month., 1918, 6, 65. Myers, V. C., and Rose, A. R.: The Nutritional Value of the Banana, THE JOURNAL A. M. A., April 7, 1917, p. 1022.

THE AWE-INSPIRING UNKNOWN

In few places does familiarity breed greater contempt than in the field of therapeutics. None know this better than the exploiters of nostrums—whether for physicians' prescription or for direct consumption by the public. This thought is inspired by reading the label of a proprietary brand of clay poultice which informs the world that the base of this marvel is "composed of the finest anhydrous and levigated argillaceous mineral." It would be fatal, commercially speaking of course, to tell the public what it could, but probably will not, easily find out by looking in the dictionary, that this specimen of exuberant verbosity simply means that the base of the product is nothing more miraculous than dried and finely powdered clay. But how much more sonorous, how much more awe-inspiring, how much more suggestive of incantations and the witch-caldron: "anhydrous and levigated argillaceous mineral." One cannot help feeling that "Prof." Samuels, the shrewd and genial quack who dispensed a pinch each of salt and sugar in hydrant water ($5.00 for 2 oz.), made a mistake in not taking the public into his confidence ("patent medicinally" speaking), by telling them the composition of his panacea. With perfect truth he might have said, for instance:

> "My preparation is composed of minimal quantities of a member of the disaccharid carbohydrates, derived from the hexoses and capable of yielding two hexose molecules by hydrolysis, having as a general formula $C_nH_mO_n$, and crystalizing in monoclinic prisms, together with an interesting chemical combination of natrium and chlorin, which, in its natural state, forms anhydrous, cubical or octahedral white crystals. These are dissolved in a colorless, limpid fluid compounded of hydrogen and oxygen."

Thus might Samuels, taking a leaf out of the notebook of the clay-poultice exploiters, have avoided the charge that he was unwilling to let the public know what he was selling. He might, conceivably, have impressed physicians of a certain type! A seeming frankness is the order of the day in advertising "patent medicines"; does not the public know, full well, that the base of the wonder-working poultice is "anhydrous and levigated argillaceous mineral"? What more can it ask?

BRAIN ANALYSIS IN PATHOLOGY

The chemical pathology of the brain can lay claim to few facts that have been established by adequate data from suitable material. Even in the case of the normal brain, the number of analytic chemical studies conducted in recent years with approved methods has been woefully small. Hence the basis for comparisons of the conditions found in health and disease remains for the most part to be more firmly established. Through the untimely death of Waldemar Koch, at Chicago a few years ago, science lost one of its most promising workers in this domain. Recognizing the paucity of contributions to our knowledge of the chemical composition of the human brain, we need not hesitate to evaluate at some worth the contributions that the more lowly animals may offer. Koch and Riddle have made a chemical study of the brains of pigeons

having a functional abnormality recognized as a lack of control of the voluntary movements.[1] The derangement, which usually persists until death, first appeared in these birds under conditions known to lead to weakness in the offspring. The disorder is exhibited in all degrees and has been inherited undiminished to the fifth generation. Usually it is shown from the earliest age, and is probably present throughout the whole development of the bird. Without giving the minutiae of the elaborate analyses made, it has been found that the brains of the ataxic individuals differed clearly from those of normal pigeons. The results of the analyses of the affected brains are interpreted as suggesting a chemical underdifferentiation or immaturity of these brains. The brains of affected birds of approximately mature age are chemically more like the brain at earlier stages of development. Although few opportunities for comparison are as yet available, the chemical variations from the normal as observed in the ataxic pigeon brains and in human amaurotic dementia are apparently alike in kind.

1. Koch, Mathilda L., and Riddle, O.: The Chemical Composition of the Brain of Normal and Ataxic (?) Pigeons, Am. Jour. Physiol., 1918, 47, 124.

Medical Mobilization and the War

Personnel of the Medical Corps

For the week ending December 20, there were in the Medical Corps 30,047 officers, a decrease of 998 since the previous week. This personnel includes four major-generals, five brigadier-generals, 221 colonels, 509 lieutenant-colonels, 2,454 majors, 9,771 captains and 17,083 lieutenants. There were in active service 29,232, a decrease of 990 since the previous week. Discharges to date include 4,240 officers.

The Association of the Medical Veterans of the World War

To Commissioned Officers in the Medical Corps of the United States Army, United States Navy, United States Public Health Service, and Medical Members of the Boards of the Selective Service System:

There has been incorporated and officered, the Association of Medical Veterans of the World War, with headquarters in Washington, D. C.

All physicians and surgeons commissioned in the Medical Reserve Corps, or Medical Corps of the United States Army, United States Navy, United States Public Health Service, medical members and medical examiners of Local, Medical Advisory and District Boards officially appointed by the President, or by the governors of states, may become active members by signing the proper application and paying the nominal sum of $1.

The Association of Medical Veterans of the World War is for the purpose of perpetuating fellowships formed in the military service of the United States, 1914 to 1918; promoting reunions of medical veterans; providing a common point of contact for organizations of medical men already founded or to be later instituted, who took official part in winning the world war; for advancing medical science among its members, and for protecting those in need, through declining years.

It is expected that this organization may become the medium of association with foreign societies of medical war veterans, to the end that the medical profession of nations may continue to be allied, in harmony with the governments that made common cause and secured a common victory.

Special associations of medical war veterans, with membership restricted to states, to the selective service, specialists in medicine, overseas service, etc., are invited to elect delegates to represent them in the house of representatives, to which the government of the Medical Veterans of the World War will be entrusted, through the board of directors, to be elected by this house of representatives.

The first convention of the Medical Veterans of the World War, to be held in Atlantic City, N. J., during the second week in June, 1919, will be the Victory Meeting, at which the affairs of the association will be placed in the hands of its officers, to be elected at that time.

Physicians who are qualified by service in either of the Medical Corps of United States government or because of having served by appointment as a member of one of the boards under the selective service system, are requested to submit applications for membership, stating the branch of service in which they have been engaged, together with their membership fee ($1), to the secretary of the association, Col. Frederick F. Russell, care of the Office of the Surgeon-General of the Army, Washington, D. C.

Frederick F. Russell, M.D., Washington, D. C.
Colonel, M. C., U. S. Army.

Weekly Bulletin A. E. F.

Nov. 25, 1918

This bulletin begins with a discussion of the current epidemic of respiratory diseases with extracts from newspapers showing recrudescences occurring in Germany, Hungary, Holland, Switzerland and Portugal. In Portugal the epidemic seemed particularly virulent, many patients dying within forty-eight hours. A statement by the Director-General of Sanitation indicates that some 25,000 people had already died, and that an average of 300 daily were dying in Lisbon. The height of the epidemic in the American Expeditionary Forces was reached in the week ending October 27. From June 15 to November 8 there had been 78,713 cases of influenza and 11,165 cases of pneumonia complicating influenza with 191 deaths attributed directly to influenza and 4,754 deaths from pneumonia. The mortality from influenza, it is stated, cannot be figured with any degree of accuracy on account of the large number of pneumonia cases reported as secondary to influenza. The final paragraph on this subject states:

> Field Hospital No. 366, 92d Division, used sheet cubicle system about beds and masks for patients and attendants so consistently and thoroughly that none of the attendants, doctors, or orderlies acquired influenza or pneumonia although the wards were often full of both diseases.

Other paragraphs follow:

> All the communicable diseases have shown a reduction in the past week except measles and meningitis. The increase in measles has been almost wholly confined to the camps and depots where replacement troops have been assembled from the Base Ports for distribution in the Armies.
>
> The meningitis is widely scattered, only a few of the hospital groups in the Advance Section having reported more than one case in the same unit.
>
> The weekly case rate for influenza has fallen from 601 per 100,000 in the week ending October 25th to 261 per 100,000 in the week ending November 15th.
>
> The weekly case rate per 100,000 for pneumonia in the week ending October 25th has fallen from 109 to 42.5 in the week ending November 15.

Dec. 2, 1918

This bulletin first points out the inaccuracy of many reports as to the cause of death given by pathologists in connection with the Army. Paragraphs are devoted to a small outbreak of typhoid from untreated water at Autreville, to the management of diphtheria at a hospital center, to a memorandum on lipovaccines against pneumonia issued by the Surgeon-General's Office, to organization in the handling of venereal diseases, and to the final weekly review.

> There has been an increase in diphtheria, scarlet fever and meningitis; diphtheria showing an increase in several hospital centers. The meningitis increase is almost wholly confined to the advanced zone. These increases do not show any evidence of local epidemics, the cases for the most part being widely scattered.
>
> The monthly period, however, shows a marked reduction in dysentery and meningitis, a slight reduction in measles, and a marked increase in typhoid. Diphtheria slightly increased, with measles and scarlet fever showing little change.
>
> The improvement in the influenza and pneumonia situation continues. For the week ending November 22, 1,552 cases of influenza reported against 4,862 the week previous, and 407 of pneumonia against 793 the week previous.

HONORABLE DISCHARGES, MEDICAL CORPS, U. S. ARMY

ARKANSAS
Pine Bluff—Jenkins, J. S.

CALIFORNIA
Pomona—Edgerton, H. W.

COLORADO
Denver—Hierley, I. C.
Trinidad—Presnall, C. W.

DISTRICT OF COLUMBIA
Washington—Custis, J. B. G.

FLORIDA
Bushnell—Hubbard, R. C.

GEORGIA
Gainesville—Rudolph, J. B.
Griffin—Anthony, E. H.

ILLINOIS
Chicago—Green, F. R.
Oak Forest—Turner, J. W.
Peoria—Ernest, J. R.

INDIANA
Dunkirk—Garber, E. C.
Napoleon—Cox, L. T.

KANSAS
Arkansas City—Young, R. C.

KENTUCKY
Fort Thomas—Robertson, J. A.

MARYLAND
Baltimore—Perry, W. B.

MASSACHUSETTS
New Bedford—Matthewson, F. W.
Winthrop—Basch, W. E. R.

MICHIGAN
Houghton—Harkness, R. B. E.

MISSISSIPPI
Lexington—Stephenson, R. M.

MONTANA
Darby—Haywood, H.

NEBRASKA
Hastings—Stewart, S. J.
Lincoln—Des Jardien, A. R.

NEW YORK
Albany—Davis, C. E.
Branchport—Costello, M. E.
Brooklyn—Giancontieri, V.
East Randolph—Crossman, J. E.
New York—Bowlby, H. M.
Brown, S. A.
Diamond, B.
Haynes, H. W.
Labruier, F. J.

PENNSYLVANIA
Chester—Grist, J. M.
McKees Rocks—Eicher, C. G.
Monaca—Cornsley, J. R.

RHODE ISLAND
Providence—Cutts, W. B.

SOUTH CAROLINA
Clinton—Hays, L. St. C.

SOUTH DAKOTA
Scotland—Leighton, I. W.

TENNESSEE
Memphis—Stone, L. A.

TEXAS
Galveston—Haden, H. C.

WEST VIRGINIA
Barrackville—Smith, E. P.
Quinimont—Lewis, W. D.

ORDERS TO OFFICERS OF THE MEDICAL CORPS, U. S. ARMY

Alabama

To Camp Sheridan, Ala., as tuberculosis examiner, from Camp Wheeler, Lieut. A. JOHNSON, Clanton.

To Fort Leavenworth, Kan., from Camp Grant, Lieut. M. L. MOORER, Mount Vernon.

To report to commanding general, Northeastern Department, from Boston, Lieut. J. R. MORGAN, Heflin.

The following order has been revoked: *To Biltmore, N. C.*, for instruction, from Fort Oglethorpe, Capt. R. C. JONES, Mobile.

Arizona

To Denver, Colo., from Fort Oglethorpe, Lieut. W. E. McWHIRT, Safford.

To Washington, D. C., from Camp A. A. Humphreys, Lieut. W. N. McDUFFIE, San Carlos.

Arkansas

The following order has been revoked: *To Camp MacArthur, Texas*, from Fort Des Moines, Major W. A. SNODGRASS, Little Rock.

California

To Azalea, N. C., from Camp Crane, Lieut. F. W. H. TAYLOR, San Diego.

To Camp Beauregard, La., base hospital, as commanding officer, from Camp Wheeler, Lieut.-Col. J. M. WHEATE, San Francisco.

To Camp Crane, Pa., from Hoboken, Capt. P. M. SAVAGE, San Bernardino.

To Camp Devens, Mass., base hospital, from Fort Oglethorpe, Lieut. E. C. BLACK, San Diego.

To Camp Hancock, Ga., from Camp Greene, Capt. J. L. LOHSE, Oakland.

To Camp Kearney, Calif., from Fort Oglethorpe, Capt. B. G. PINKERTON, Los Angeles. Base hospital, from Fort Oglethordpe, Capt. G. L. MARION, San Francisco.

To Camp Lewis, Wash., from Fort Oglethorpe, Lieut. J. F. SLAVICH, San Francisco.

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Lieut. A. O. HOLMES, Redlands.

To Everman, Texas, Barron Field, from Mineola, Capt. A. B. BAER, San Francisco.

To Fort Leavenworth, Kan., from Camp Fremont, Lieut. M. H. HIRSCHFELD, San Francisco.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Williamsbridge, N. Y.*, from Camp Lee, Capt. H. P. WILSON, Whittier.

To San Francisco, Calif., Letterman General Hospital, from Fort Douglas, Capt. A. L. BROWN, Riverside; from Fort Oglethorpe, Major H. R. OLIVER, San Francisco.

The following orders have been revoked: *To Camp Wadsworth, S. C.*, base hospital, from Camp Crane, Capt. H. K. FABER, San Francisco. *To Hollywood, Calif.*, from Fort McDowell, Capt. F. P. BRENDEL, San Francisco. *To New Haven, Conn.*, Yale Army Laboratory School, from Hoboken, Lieut. T. L. ROGERS, Long Beach.

Canal Zone

To Camp Upton, N. Y., base hospital, for instruction, from Fort Oglethorpe, Lieut. L. M. DRENNAN, Ancon.

To Camp Wheeler, Ga., base hospital, from Camp Crane, Lieut. D. J. MURPHY, Corozal.

Colorado

To Fort Douglas, Utah, from Fort Oglethorpe, Lieut. L. H. WADE, Denver.

To Newport News, Va., from Fort Oglethorpe, Lieut. E. K. SHELTON, Antonito.

To Whipple Barracks, Ariz., for instruction, from Fort Oglethorpe, Capt. H. R. McGRAW, Denver.

Connecticut

To Camp Jackson, S. C., base hospital, from Fort Oglethorpe, Lieut. W. J. H. FISCHER, Milford.

To Camp Wadsworth, S. C., base hospital, from Fort Oglethorpe, Capt. A. SCRIMGEOUR, Bridgeport.

To Dallas, Texas, Love Field, as flight surgeon, from Camp Dick, Capt. A. E. BRIDES, New Haven.

To Madison Barracks, N. Y., from Fort Oglethorpe, Lieut. C. H. AUDET, Waterbury.

To New Haven, Conn., from Camp Crane, Capt. R. E. BLACK, New London.

To Pittsburgh, Pa., from Plattsburg Barracks, Capt. L. A. NOTKINS, New Haven.

To report to the commanding general, Northeastern Department, from Boston, Lieut. H. S. REYNOLDS, Hartford.

District of Columbia

To Camp Upton, N. Y., base hospital, for instruction, from Fort Oglethorpe, Capt. F. W. ROMAINE, Washington.

To Long Beach, N. Y., from the Surgeon-General's Office, Major E. B. NEFF.

To Pittsburgh, Pa., from Washington, Lieut.-Col. E. D. KRAMERS.

Florida

To Lakewood, N. J., from Camp Crane, Lieut. W. W. FARNELL, Springfield.

To Lonoke, Ark., Eberts Field, from San Antonio, Lieut. R. E. GILBERT, Jacksonville.

To report to the commanding general, Southern Department, from Fort Bayard, Capt. W. J. LANCASTER, Tampa.

To Waco, Texas, Rich Field, from Mineola, Lieut. M. A. LISCHKOFF, Pensacola.

Georgia

To Camp Beauregard, La., base hospital, from Fort Oglethorpe, Lieut. D. M. BRADLEY, Waycross.

To Camp Bowie, Texas, base hospital, from Fort Oglethorpe, Capt. J. J. CLARK, Waycross.

To Camp Devens, Mass., base hospital, from Fort Oglethorpe, Lieut. H. L. BARER, Carrollton.

To Camp Grant, Ill., base hospital, from Fort Oglethorpe, Lieut J. H. CAMPBELL, Jefferson.

To Camp Gordon, Ga., base hospital, from Camp Zachary Taylor, Lieut. F. P. NORMAN, Greenville.

To Camp Upton, N. Y., base hospital, for instruction, from New York, Lieut. L. W. WILLIAMS, Savannah.

To Fort Benjamin Harrison, Ind., from Camp Meade, Capt. J. A. WHITE, Albany.

To Fort Douglas, Utah, from Fort Oglethorpe, Lieut.-Col. A. D. PARCE.

To Fort McHenry, Md., from Carlisle, Capt. L. W. CHILDS, Atlanta.

To Fort Sam Houston, Texas, base hospital, from Camp Crane, Lieut. C. USHER, Savannah.

The following order has been revoked: *To Rochester, Minn.*, Mayo Clinic, for instruction, from Fort McPherson, Major W. T. WEISSINGER.

Idaho

To Camp Upton, N. Y., base hospital, for instruction, from Fort Oglethorpe, Lieut. J. L. McDONALD, Payette.

To Fort Des Moines, Iowa, from Fort Oglethorpe, Lieut. E. N. ROBERTS, Pocatelo.

Illinois

To Camp Custer, Mich., from Ann Arbor, Capt. O. O. STANLEY, Champaign.

To Camp Grant, Ill., base hospital, from Fort Oglethorpe, Capt. G. L. ALT, Chicago.

To Camp Hancock, Ga., to examine the command for nervous and mental diseases, from Jackson Barracks, Capt. W. K. DYER, Kankakee.

To Camp Jackson, S. C., base hospital, from Fort Oglethorpe, Lieut. J. D. ELLIS, Chicago.

To Camp Logan, Texas, to examine the troops for cardiovascular diseases, from Fort Thomas, Lieut. G. H. ANDERSON, Chicago.

To Camp Sheridan, Ala., as tuberculosis examiner, from Camp Wheeler, Lieut. C. J. HYSLOP, Chicago.

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Capt. J. M. GRAYBEAL, Lieut. F. A. LAGORIC, Chicago.

To Camp Upton, N. Y., base hospital, from Fort Oglethorpe, Lieut. J. J. McCARTY, Jr., Chicago.

To Camp Wadsworth, S. C., base hospital, from Fort Oglethorpe, Capt. C. M. McKENNA, Chicago.

To Camp Zachary Taylor, Ky., as tuberculosis examiner, from Jefferson Barracks, Capt. R. E. ADKINS, Chicago.

To Cape May, N. J., from Fort Oglethorpe, Lieut. E. F. SLAVIK, Chicago.

To Chicago for instruction, from Camp Crane, Lieut. S. F. UBALA, Chicago.

To Fort Benjamin Harrison, Ind., from Fort Oglethorpe, Lieuts. G. S. BETTS, Banner; R. H. STONGER, Kankakee.

To Fort Des Moines, Iowa, from Fort Oglethorpe, Lieut. J. P. GRAF, Chicago.

To Fort Ethan Allen, Vt., from Richomond, Capt. A. T. EIDE, Chicago.

To Fort Leavenworth, Kan., from Camp Zachary Taylor, Lieut. D. B. ROTMAN, Chicago; from Fort Riley, Capt. G. W. BROCK, Atlanta.

To Fort Moultrie, S. C., from Fort Oglethorpe, Lieut. H. KATZ, Chicago.

To Fort Ontario, N. Y., from Fort Oglethorpe, Lieut. S. MANN, Chicago.

To Fort Sheridan, Ill., from Indianapolis, Capt. J. A. GOODMAN, Chicago. For instruction, from Fort Oglethorpe, Capt. F. E. CULVER, Chicago.

To Hoboken, N. J., from Fort Oglethorpe, Capt. L. B. CAVINS, Bloomington.

To Hot Springs, N. C., Capt. W. D. NAPHEYS, Jr., Chicago.

To Lake Charles, La., Gerstner Field, from Mineola, Capt. G. C. OTRICH, Belleville.

To Millington, Tenn., Park Field, from Mineola, Lieut. S. M. MORWITZ, Chicago.

To Pittsburgh, Pa., from Fort Oglethorpe, Capt. H. E. PINTLER, Peoria; from Lakewood, Capt. S. R. CATLIN, Rockford.

To San Antonio, Texas, Kelly Field, from Mineola, Capt. C. M. ROBERTSON, Chicago.

The following orders have been revoked: *To Boston, Mass.*, from Camp Crane, Lieut. L. C. BASSETT, Farina. *To Camp Travis, Texas*, from Fort Oglethorpe, Capt. J. H. ELLINGSWORTH, East Moline. *To Rochester, Minn.*, Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Sherman, Capt. W. C. SMITH, Chicago.

Indiana

To Boston, Mass., from Fort Oglethorpe, Lieut. A. O. TRUELOVE, Warsaw.

To Camp A. A. Humphreys, Va., from Camp Crane, Capt. R. H. THOMAS, Indianapolis.

To Camp Benning, Ga., base hospital, from Fort Oglethorpe, Capt. S. L. EGART, Indianapolis.

To Camp Hancock, Ga., as tuberculosis examiner, from Fort Slocum, Capt. N. W. CLARK, Rossville.

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Lieut. H. J. PIERCE, Terre Haute.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. C. E. QUINN, Burlington.

To Denver, Colo., from Camp Travis, Capt. H. S. GIFFORD, Tipton.

To Fort Leavenworth, Kan., from Fort Oglethorpe, Lieut. C. C. BITLER, New Castle.

To Fort McHenry, Md., for instruction, from Fort Oglethorpe, Capt. H. A. DUENLING, Fort Wayne.

To Fort McPherson, Ga., from Fort Oglethorpe, Capt. R. C. SHANKLIN, South Bend.

To Fort Sheridan, Ill., from Camp Fremont, Major F. F. HUTCHINS, Indianapolis.

To Hoboken, N. J., from Newport News, Lieut. T. K. DAVIS, Wabash.

The following orders have been revoked: *To Camp Crane, Pa.*, from Hoboken, Lieut. L. G. SPRADLEY, Teanyson. *To Camp Logan, Texas*, from Oglethorpe, Capt. C. M. DUPUY, Riley. *To West Baden, Ind.*, from Camp Crane, Lieut., R. A. GILMORE, Michigan City.

Iowa

To Biltmore, N. C., from Camp Crane, Lieut. M. T. MORTON, Iowa City.

To Camp Dodge, Iowa, from Camp Grant, Capt. J. H. SCHRUP, Dubuque.

To Denver, Colo., from Fort Oglethorpe, Capt. T. B. LACEY, Glenwood; from Fort Riley, Capt. J. T. PADGHAM, Grinnell.

To Fort Leavenworth, Kan., from Fort Riley, Capt. P. B. BATTEY, Independence; from Washington, Lieut. J. L. MARKER, Centerville.

To report to the commanding general, Northeastern Department, from Camp Devens, Capt. C. B. ROGERS, Earlville.

The following order has been revoked: *To Camp Abraham Eustis, Va.*, from Camp Custer, Lieut. J. W. MYERS, Sheldon.

Kansas

To report to the commanding general, Northeastern Department, from Camp Devens, Lieut. G. D. RUTH, Moundridge.

Kentucky

To Boston, Mass., from Camp Crane, Lieut. W. G. COMBS, Kirksville.

To Camp Devens, Mass., base hospital, from Fort Oglethorpe, Lieut. M. C. BAKER, Louisville.

To Camp Hancock, Ga., from Camp Lee, Lieut. E. J. NESTLEY, Covington.

To Camp Jackson, S. C., base hospital, from Fort Oglethorpe, Lieuts. W. J. FLOWERS, Columbia; A. D. ECHERT, Newport.

To Camp Sevier, S. C., to examine the command for nervous and mental diseases, from Ann Arbor, Lieut. W. E. RENDER, Lakeland.

To Camp Travis, Texas, base hospital, from Fort Oglethorpe, Lieut. J. E. EDWARDS, Lancaster.

To Camp Wheeler, Ga., base hospital, from Fort Oglethorpe, Capt. L. H. KERR, Louisville.

To report to the commanding general, Northeastern Department, from Boston, Capt. R. L. WOODARD, Hopkinsville.

Louisiana

To Camp Beauregard, La., base hospital, from Camp Lee, Major O. L. POTHIER, New Orleans.

To Camp Hancock, Ga., from Camp Greene, Capt. E. HOLLOWAY, Paquemine.

To Camp Zachary Taylor, Ky., as tuberculosis examiner, from Jefferson Barracks, Lieut. P. L. QUERENS, Alexandria.

To Chicago, Ill., from Camp Jackson, Capt. R. E. STONE, New Orleans.

To Fort Leavenworth, Kan., from Fort Riley, Major R. C. P. TRUITT, Jackson.

To Marbleton, Pa., for instruction, from Fort Oglethorpe, Capt. E. L. LECKERT, New Orleans.

Maine

To Lonoke, Ark., Eberts Field, from Mineola, Capt. S. E. FISHER, Portland.

Maryland

To Camp Joseph E. Johnston, Fla., base hospital, from Camp Jackson, Capt. T. P. SPRUNT, Baltimore.

To Camp McClellan, Ala., to examine the command for nervous and mental diseases, from Camp Forrest, Lieut. F. N. OGDEN, Baltimore.

To Camp Shelby, Miss., base hospital, from Fort Oglethorpe, Lieut. Le P. HOLMES, Baltimore.

To Fort Ontario, N. Y., from Fort Oglethorpe, Lieut. F. A. MILLER, Salisbury.

The following orders have been revoked: *To Camp Upton, N. Y.*, from Hoboken, Lieut. B. M. JAFFE, Baltimore. *To Richmond, Va.*, for instruction, from Fort Oglethorpe, Lieut. G. E. LANCASTER, Bowie.

Massachusetts

To Biltmore, N. C., from Camp Hancock, Major E. B. BIGELOW, Worcester.

To Boston, Mass., from Fort Oglethorpe, Capt. A. G. RICE, Springfield.

To Camp Beauregard, La., with the board examining the troops for cardiovascular diseases, from Fort Oglethorpe, Lieut. F. F. DEXTER, Long Meadow.

To Camp Devens, Mass., base hospital, from Fort Oglethorpe, Capt. E. A. CUNNINGHAM, Belmont; from New Haven, Major L. H. SPOONER, Boston.

To Camp Dick, Texas, from Mineola, Lieut. T. F. CAPELES, Haverhill.

To Camp Dodge, Iowa, as camp sanitary inspector, from Pittsburgh, Major J. WARREN, Boston.

To Camp Grant, Ill., base hospital, from Fort Oglethorpe, Capt. J. N. BOYER, Springfield; Lieut. H. C. TOOKER, Boston.

To Camp Hancock, Ga., from Camp Greene, Lieut. L. C. DURSTHOFF, Lowell.

To Camp Jackson, S. C., base hospital, from Fort Oglethorpe, Capt. H. F. DEARBORN, Lawrence; Lieut. J. L. DOWLING, Boston.

To Camp Sheridan, Ala., with the board examining the command for nervous and mental diseases, from Camp Sevier, Lieut. C. B. PARTINGTON, Framingham.

To Camp Zachary Taylor, Ky., base hospital, for instruction, from Fort Oglethorpe, Capt. W. L. CLARK, Jr., Worchester.

To Carlisle, Pa., for instruction, from Fort Oglethorpe, Lieut. W. F. DOLAN, Quincy.

To Colonia, N. J., from Camp Crane, Lieut. W. K. COFFIN, West Medford; from Fort Oglethorpe, Lieut. G. C. ANTHONY, Wellesley.

To Fort Sheridan, Ill., from Fort Oglethorpe, Capt. A. H. RING, Arlington Heights.

To Fort Sill, Okla., base hospital, from Fort Oglethorpe, Lieut. B. L. ASHMORE, Palmer.

To Garden City, N. Y., Mitchel Field, as assistant to flight surgeon, from Mineola, Lieut. L. R. BURNETT, Cambridge.

To Hoboken, N. J., from Fort Oglethorpe, Lieuts. A. J. LEARY, A. S. MacMILLAN, Boston.

To Plattsburg Barracks, N. Y., from Camp Devens, Capt. R. A. GREENE, Palmer.

To report to the commanding general, Northeastern Department, from Boston, Lieuts. D. F. MURPHY, Beverly; S. L. MARNOY, Chelsea.

The following orders have been revoked: *To Carlisle, Pa.*, from Fort Oglethorpe, Capt. W. G. CURTIS, Wollaston. *To Detroit, Mich.*, from Camp Crane, Lieut. N. B. McWILLIAMS, Williamstown.

Michigan

To Camp Abraham Eustis, Va., as orthopedic surgeon, from Fort Oglethorpe, Lieut. L. B. COWEN, Detroit.

To Camp Shelby, Miss., as camp surgeon, from Camp Devens, Lieut.-Col. W. H. HUTCHINGS, Detroit.

To Fort Benjamin Harrison, Ind., from Ann Arbor, Lieut. V. ADAIR, Ann Arbor.

To Fort Dupont, Del., from New Haven, Lieut. C. M. SPENCER, Freesoil.

To Fort Ontario, N. Y., for instruction, from Fort Oglethorpe, Capt. W. J. ANDERSON, Iron Mountain.

To Fort Sheridan, Ill., from Ann Arbor, Capt. F. S. BACHELDER, Pontiac.

To Hoboken, N. J., from Fort Oglethorpe, Lieut. J. H. MULLER, Grand Rapids.

To Pittsburgh, Pa., for instruction, from Fort Oglethorpe, Lieut. W. D. BARRETT, Detroit.

The following orders have been revoked: *To Camp Crane, Pa.*, from Hoboken, Capt. H. W. LONG, Escanaba. *To Fort Sheridan, Ill.*, from Camp Crane, Lieut. C. E. TRUESDELL, Detroit. *To Pittsburgh, Pa.*, from Camp Crane, Major W. H. MARSHALL, Flint.

Minnesota

To Camp Pike, Ark., from Fort Oglethorpe, Lieut. P. A. O'LEARY, Rochester.

To Camp Sevier, S. C., from Fort Oglethorpe, Lieut. A. H. SCHWARTZ, Duluth.

To Camp Zachary Taylor, Ky., to examine the command for nervous and mental diseases, from Camp Meade, Lieut. F. W. WHITMORE, St. Paul.

To Fort Benjamin Harrison, Ind., from Fort Oglethorpe, Lieut. W. B. MARTIN, Fergus Falls.

To Fort Des Moines, Iowa, from Fort Riley, Capt. W. H. REPLOGLE, Wabasha.

To Fort McHenry, Md., from the Surgeon-General's Office, Major A. R. COLVIN, St. Paul.

To Lakewood, N. J., from Camp Crane, Lieut. H. N. KLEIN, St. Paul.

To Otisville, N. Y., from Camp Crane, Lieut. W. H. DANIELS, Crookston.

To Pittsburgh, Pa., for instruction, from Fort Oglethorpe, Lieut. G. A. MURRAY, Rochester.

To report to the commanding general, Northeastern Department, from Boston, Lieut. F. H. NEHER, St. Paul.

Mississippi

To Hoboken, N. J., from Camp Shelby, Lieut.-Col. F. S. MACY.

To Pittsburgh, Pa., from Fort Oglethorpe, Capt. J. E. WALLACE, Biloxi.

Missouri

To Baltimore, Md., from Camp Crane, Capt. F. R. MORLEY, Sedalia.

To Camp Benning, Ga., from Fort Oglethorpe, Capt. D. B. GARSTANG, St. Louis.

To Camp Crane, Pa., from Hoboken, Capt. W. L. SHARP, Little Rock.

To Camp Lee, Va., base hospital, from Fort Oglethorpe, Lieut. B. F. HARRIS, Kansas City.

To Camp Meade, Md., base hospital, from Camp Bowie, Capt. J. E. DEWEY, Springfield.

To Camp Sevier, S. C., base hospital, from Fort Oglethorpe, Lieut. D. J. ROYER, Joplin.

To Camp Travis, Texas, base hospital, from Fort Oglethorpe, Lieut. F. W. HAYNES, St. Louis.

To Camp Wheeler, Ga., base hospital, from Camp Crane, Lieut. E. V. KRING, St. Louis.

To Denver, Colo., from Camp Pike, Lieuts. W. O. FINNEY, Chaffee; M. H. SHELBY, Charleston; from Fort Riley, Capt. S. B. HIRSCHBERG, Kansas City.

To Fort McHenry, Md., from New York, Lieut. L. E. MONROE, Bonne Terre.

To Otisville, N. Y., for instruction, from Fort Oglethorpe, Capt. G. W. KOENIG, St. Louis.

To St. Louis, Mo., from Hot Springs, Capt. J. F. POTTS, St. Louis.

To report to the commanding general, Northeastern Department, from Camp Devens, Capt. H. A. BREVFOGLE, Kansas City; A. GUNDLACH, St. Louis; Lieut. S. B. BUCK, Anderson.

The following order has been revoked: *To Fort Des Moines, Iowa*, for instruction, from Camp Crane, Lieut. A. M. GREGG, Joplin.

Montana

To report to the commanding general, Eastern Department, from Camp Devens, Lieut. C. W. BICE, Great Falls.

Nebraska

To Camp Travis, Texas, base hospital, from Camp Grant, Capt. J. F. KELLY, Dawson.

To Otisville, N. Y., from Fort Oglethorpe, Major W. N. ANDERSON, Omaha.

To report to the commanding general, Northeastern Department, from Camp Devens, Capt. F. P. REED, Weeping Water.

To San Francisco, Calif., from Fort Oglethorpe, Capt. F. H. KUEGLE, Omaha.

The following orders have been revoked: *To Camp Crane, Pa.*, from Hoboken, Capt. C. K. GIBBONS, Kearney. *To Jefferson Barracks, Mo.*, from St. Louis, Capt. F. C. GENUNG, Wausa.

Nevada

To Fort Sill, Okla., base hospital, from Fort Oglethorpe, Lieut. R. A. BOWDLE, East Ely.

New Hampshire

To Camp Dix, N. J., with the board examining the troops for cardiovascular diseases, from Fort Oglethorpe, Capt. E. A. TRACY, Keene.

To Camp Greene, N. C., base hospital, for instruction, from Fort Oglethorpe, Lieut. L. B. MARCUS, Berlin.

To Camp Upton, N. Y., base hospital, from Camp Crane, Capt. F. A. SPRAGUE, Concord.

To Colonia, N. J., from Camp Crane, Lieut. E. A. JONES, Manchester.

To Fort Leavenworth, Kan., from Fort Oglethorpe, Lieut. G. A. JOHNSON, Concord.

To Hoboken, N. J., from Fort Oglethorpe, Lieut. A. C. LISTON, North Walpole.

New Jersey

To Camp Devens, Mass., base hospital, from Camp Zachary Taylor, Lieut. P. LIVINGSTON, East Orange.

To Camp Greene, N. C., base hospital, for instruction, from Fort Oglethorpe, Lieut. J. A. DERIVAUX, Newark.

To Camp Hancock, Ga., from Camp Lee, Lieut. M. KUMMEL, Harrison.

To Camp Logan, Texas, with the board examining the troops for cardiovascular diseases, from Camp Travis, Capt. T. ALSOP, Atlantic City.

To Camp Meade, Md., from Fort Oglethorpe, Lieut. J. J. GREENGRASS, Paterson.

To Camp Wadsworth, S. C., base hospital, from Fort Oglethorpe, Lieut. H. B. EPSTEIN, Newark.

To Camp Zachary Taylor, Ky., base hospital, for instruction, from Fort Oglethorpe, Capt. J. FORT, Newark.

To Chicago, Ill., from Fort Oglethorpe, Lieut. H. J. PERLBERG, Jersey City.

To Fort Adams, R. I., from Fort Oglethorpe, Lieut. H. N. GOLDING, Paterson.

To Fort Leavenworth, Kan., from Camp Jackson, Lieut. H. I. REXFORD, Willard.

To Fort Totten, N. Y., from Camp Dix, Lieut. J. F. BOWMAN, Irvington.

To Hoboken, N. J., from Fort Oglethorpe, Lieut. J. D. TIDABACK, Newark.

To Plattsburg Barracks, N. Y., for instruction, from Fort Oglethorpe, Lieut. G. W. FINKE, Hackensack.

To Port Terminal, S. C., as camp sanitary inspector, from Fort Oglethorpe, Capt. F. B. MITCHELL, East Orange.

To report to the commanding general, from Camp Devens, Capt. E. L. WEST, Trenton.

To Richmond, Va., from Fort Oglethorpe, Lieut. I. S. INGBER, Secaucus.

To Walter Reed General Hospital, D. C., for instruction, from Camp Lee, Capt. M. ASHER, Newark.

The following order has been revoked: *To Camp Abraham Eustis, Va.*, base hospital, from Hoboken, Major L. O. TARLETON.

New York

To Austin, Texas, University of Texas, from Mineola, Capt. F. H. LASHER, Brooklyn.

To Azalea, N. C., from Fort Oglethorpe, Capt. L. H. FINCH, Amsterdam; Lieut. J. S. EDLIN, New York.

To Boston, Mass., from Camp Crane, Lieut. G. G. DAVIS, Arcade; from Washington, Capt. C. E. E. PANNACI, Gloversville.

To Camp A. A. Humphreys, Va., with the board examining the troops for cardiovascular diseases, from Fort Oglethorpe, Capt. P. S. SABINE, New York.

To Camp Bowie, Texas, with the board examining the troops for cardiovascular diseases, from Camp Crane, Lieut. J. D. TRASK, Jr., New York.

To Camp Custer, Mich., base hospital, from Fort Oglethorpe, Capt. A. S. TENNER, New York.

To Camp Devens, Mass., base hospital, from Fort Oglethorpe, Lieuts. A. S. BLUMGARTEN, New York; R. A. ADAMS, Whitestone.

To Camp Dix, from Fort Oglethorpe, Lieut. L. L. COHAN, Brooklyn.

To Camp Greene, N. C., base hospital, for instruction, from Fort Oglethorpe, Lieut. C. W. DEMONG, Syracuse.

To Camp Hancock, Ga., from Camp Greene, Lieut. A. LACOVARA, New York; from Camp Lee, Lieut. H. J. SCHWARTZ, New York. As tuberculosis examiner, from Waynesville, Capt. H. VAN RENSSELAER, Albany. *To examine the command* for nervous and mental diseases, from Washington, Capt. J. F. SHANAHAN, Buffalo.

To Camp Jackson, S. C., base hospital, from Fort Oglethorpe, Capt. C. J. DILLON, New York; Lieuts. L. T. FRICKE, Brooklyn; R. P. HIGGINS, Cortland; B. EDELSACK, New York; from New Haven, Lieut. G. P. McNEILL, New York.

To Camp Joseph E. Johnston, Fla., base hospital, from Fort Oglethorpe, Capt. L. WING, New York.

To Camp Lee, Va., base hospital, from Fort Oglethorpe, Lieuts. S. T. HAMILTON, Elmira; N. W. GETMAN, Oneonta.

To Camp Logan, Texas, with the board examining the troops for cardiovascular diseases, from Fort Oglethorpe, Capt. J. J. KLEIN, East Aurora.

To Camp McClellan, Ala., with the board examining the troops for cardiovascular diseases, from Camp Zachary Taylor, Lieut. F. W. HOMCOMB, Palmyra.

To Camp Meade, Md., from Curtis Bay, Capt. G. J. BUSCK, Westfield; from Fort Oglethorpe Capt. C. F. POTTER, Syracuse.

To Camp Sheridan, Ala., as tuberculosis examiner, from Camp Wheeler, Capt. B. S. HOROWICZ, Lieut. M. SCHAIE, New York.

To Camp Sherman, Ohio, from Fort Oglethorpe, Lieut. J. H. BURKE, Brooklyn.

To Camp Upton, N. Y., base hospital, from Fort Oglethorpe, Capt. N. L. HAWKINS, Watertown; Lieuts. I. J. LEVY, L. HAMELOK, New York.

To Camp Wadsworth, S. C., to examine the command for nervous and mental diseases, from Camp Jackson, Lieut. J. MARSHACK, New York.

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. H. ACKERMAN, New York.

To Carlisle, Pa., for instruction, from Fort Oglethorpe, Lieut. A. D. HAVERSTOCK, Brooklyn.

To Chicago, Ill., from Fort Oglethorpe, Capt. S. I. HIRSCH, New York; from New Haven, Major H. L. VAN WINKLE, Albany.

To Colonia, N. J., from Camp Crane, Capt. W. H. VEEDER, Rochester; from New York, Lieut. H. S. BULL, Auburn.

To Dansville, N. Y., from Camp Custer, Major A. S. MOORE, Middletown.

To Emmetsburg, Md., from Baltimore, Capt. E. W. BROWN, Mount Kisco.

To Fort Bayard, N. M., from Camp Grant, Capt. L. R. CORNMAN, Rochester.

To Fort Benjamin Harrison, Ind., from Fort Oglethorpe, Lieuts. L. A. BOUTON, Fonda; A. CANFIELD, New York; D. H. BLUESTONE, Syracuse.

To Fort Leavenworth, Kan., from Camp Lee, Lieut. L. E. SANFORD, Binghamton; from Fort Jay, Capt. A. T. BAKER, Elmhurst.

To Fort McPherson, Ga., from Fort Oglethorpe, Capt. H. G. DUNHAM, Lieuts. S. W. ROCK, S. STEIN, New York.

To Fort Ontario, N. Y., from Fort Oglethorpe, Lieut. S. MILBANK, New York.

To Fort Riley, base hospital, from Fort Oglethorpe, Capt. W. W. BESTWICK, New York.

To Fort Sheridan, Ill., from Fort Oglethorpe, Lieut. W. W. WOGLOM, De Ruyter.

To Hoboken, N. J., from Fort Oglethorpe, Major W. H. STEWART, New York; Lieut. W. H. GALLAGHER, Niagara Falls.

To Lakewood, N. J., from Camp A. A. Humphreys, Lieut. A. E. NEERGAARD, New York.

To Madison Barracks, N. Y., from Fort Oglethorpe, Lieuts. A. R. SHIRLEY, New York; A. T. LAWLESS, Syracuse.

To Newport, from Washington, Cols. R. P. A. SULLIVAN, Brooklyn; L. A. CONNER, New York.

To Otisville, N. Y., for instruction, from Fort Oglethorpe, Capt. F. KNOWLES, New York.

To report to the Commanding General, Northeastern Department, from Boston, Lieut. H. T. BLAIR, Brooklyn.

To Rockefeller Institute, from Camp Crane, Capt. E. C. KOENIG, Buffalo.

To Walter Reed General Hospital, D. C., from Fort Oglethorpe, Lieut. W. W. ELDRIDGE, New York. For instruction, from Williamsbridge, Capt. N. E. TITUS, New York.

To Washington, D. C., from Camp A. A. Humphreys, Lieut. H. SHARP, New York.

To Waynesville, N. C., from Fort Oglethorpe, Lieut. J. B. DEUEL, Rochester. For instruction, from Fort Oglethorpe, Lieut. D. P. MacGUIRE, Staten Island.

To West Baden, Ind., from Fort Oglethorpe, Lieut. L. HAUSMAN, New York.

The following orders have been revoked: *To Boston, Mass.*, from Camp Crane, Capt. A. H. TERRY, New York. *To Camp Abraham Eustis, Va.*, from Eastern Department, Capt. F. W. HUNTER, Fort Totten. *To Camp Meade, Md.*, from Camp Crane, Lieut. J. M. McTIERNAN, New York. *To Lakewood, N. J.*, for instruction, from Camp Jackson, Major J. P. F. BURKE, Buffalo. *To report to the commanding General*, Eastern Department, from Camp Sherman, Lieut. G. W. WHEELER, New York. *To Rochester, Minn.*, Mayo Clinic, from Camp Crane, Major J. C. MASSON, Rochester. *To San Francisco, Calif.*, Letterman General Hospital, from Camp Crane Lieut. A. E. GORDIN, New York. *To White Plains, N. Y.*, from Camp Jackson, Major R. H. McCONNELL, New York.

North Carolina

To Camp Gordon, Ga., with the board examining the troops for cardiovascular diseases, from Fort Oglethorpe, Capt. C. C. ORR, Asheville.

To Camp Hancock, Ga., from Camp Greene, Lieut. L. O. GIBSON, Statesville.

To Camp Shelby, Miss., base hospital, from Fort Oglethorpe, Capt. J. J. BAREFOOT, Graham.

To Plattsburg Barracks, N. Y., from Camp Jackson, Capt. M. C. PALMER, Tryon.

Ohio

To Azalea, N. C., from Camp Crane, Lieut H. H. LOWE, Leesburg; from Fort Oglethorpe, Lieut. A. M. ROSENBLUM, Youngstown.

To Camp Abraham Eustis, Va., as orthopedic surgeon, from Fort Oglethorpe, Capt. L. B. ZINTSMASTER, Massillon; Lieut. N. J. SEYBOLD, Toledo.

To Camp Dodge, Iowa, with the board examining the troops for cardiovascular diseases, from Fort Oglethorpe, Capt. R. H. QUICK, Toledo.

To Camp Grant, Ill., base hospital, from Fort Oglethorpe, Lieuts. H. P. TIMBERLAKE, Cleveland; H. K. BECKWITH, Toledo.

To Camp Hancock, Ga., from Camp Greene, Lieuts. B. B. BRIM, J. J. SWEENEY, Toledo.

To Camp Sheridan, Ala., with the board examining the troops for cardiovascular diseases, from Fort Oglethorpe, Capt. D. W. PHILO, Fremont.

To Cape May, N. J., from Camp Crane, Capt. M. E. BLAHD, Cleveland.

To Carlisle, Pa., from Ann Arbor, Capt. W. F. MAXWELL, Toledo.

To Denver, Colo., from Fort Riley, Lieut. R. R. KERKOW, Hicksville.

To Fort Leavenworth, Kan., from Ann Arbor, Lieut. L. A. LURIE, Cincinnati; from Fort Oglethorpe, Lieut. W. H. VORBAU, Lima.

To Fort McHenry, Md., for instruction, from Fort Oglethorpe, Lieut. F. F. KRAMER, Cincinnati.

To Fort Sam Houston, Texas, base hospital, from Ann Arbor, Lieut. P. G. TAIT, Toledo.

To Fort Snelling, Minn., from Army Medical School, Capt. E. A. KLEIN, Norwood.

To Hoboken, N. J., from Fort Oglethorpe, Lieut. W. P. ULTES, Springfield.

To Newport News, Va., from Fort Oglethorpe, Lieut. J. W. JOLLEY, Morral.

To Richmond, Va., from Fort Oglethorpe, Lieut. W. J. FRANCIS, Kalida.

To Walter Reed General Hospital, D. C., from Plattsburg Barracks, Lieut. A. E. KISER, Cincinnati.

To Washington, D. C., St. Elizabeth's Hospital, from Ann Arbor, Lieut. J. H. BERRY, Lima.

The following orders have been revoked: *To Camp Crane, Pa.*, from Hoboken, Lieut. D. W. FELLERS, Bloomville. *To Fort Dupont, Del.*, from Camp Holabird, Lieut. R. A. ELLIOTT, Alger.

Oklahoma

To Denver, Colo., from Fort Riley, Lieut. H. M. NICHOLSON, Muskogee.

To Fort Benjamin Harrison, Ind., from Fort Oglethorpe, Lieut. F. H. CLARK, El Reno.

Oregon

To Fort Leavenworth, Kan., from Camp Lewis, Lieut. D. R. ROSS, Salem.

The following orders have been revoked: *To Camp Lewis, Wash.*, base hospital, for instruction, from Camp Crane, Lieut. G. L. BOYDEN, Pendleton. *To Camp Wadsworth, S. C.*, base hospital, from Camp Crane, Capt. C. E. SEARS, Portland.

Pennsylvania

To Arcadia, Fla., Carlstrom Field, from Mineola, Capt. S. H. HORNE, Philadelphia.

To Baltimore, Md., from Plattsburg Barracks, Capt. C. C. WHOLEY, Pittsburgh.

To Camp Gordon, Ga., with the board examining the command for nervous and mental diseases, from Fort Oglethorpe, Lieut. W. C. CHANEY, Philadelphia.

To Camp Grant, Ill., base hospital, from Fort Oglethorpe, Lieut. G. C. GLENN, State College.

To Camp Hancock, Ga., from Camp Greene, Lieuts. F. J. CONAHON, Mores Colliery; J. M. HIGGINS, Sayre.

To Camp Henry Knox, and to Camp Zachary Taylor, Ky., with the board examining the troops for cardiovascular diseases, from Fort Oglethorpe, Capt. C. FALKOWSKY, Jr., Scranton.

To Camp Jackson, S. C., base hospital, from Camp Crane, Lieut. J. M. FLEMING, Blairs Mills; from Camp Travis, Capt. G. P. PILLING, Jr., Philadelphia.

To Camp Logan, Texas, base hospital, from Camp Dodge, Lieut. W. E. RAMSEY, Philadelphia.

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Lieut. H. W. JONES, Philadelphia.

To Camp Upton, N. Y., base hospital, from Fort Oglethorpe, Lieuts. P. A. LONERGAN, Dickson City; A. LEVY, Philadelphia.

To Camp Zachary Taylor, Ky., base hospital, for instruction, from Fort Oglethorpe, Capt. H. D. JORDAN, Allentown.

To Cape May, N. J., from Fort Oglethorpe, Lieut. J. P. ROTH, Ashland.

To Colonia, N. J., from Camp Crane Capt. R. J. BEHAN Pittsburgh; from Fort Oglethorpe, Lieut. E. N. FOSTER, Pittsburgh.

To Fort McHenry Md., from New York, Lieut. C. A. LEY, Pittsburgh.

To Fort Sheridan, Ill., from Fort Oglethorpe, Lieut. D. J. MORTON, Philadelphia. For instruction, from Fort Oglethorpe, Capt. H. P. LEOPOLD, Philadelphia.

To Hicks, Texas, Taliaferro Field, as assistant to flight surgeon, from Mineola, Capt. C. W. JENNINGS, Pittsburgh.

To Hoboken, N. J., from Fort Oglethorpe, Lieut. T. A. MONOHAN, Shenandoah.

To Houston, Texas, Ellington Field, from Mineola, Capt. W. MARSHALL, Pittsburgh.

To Pittsburgh, Pa., from Fort Oglethorpe, Lieut. J. A. MALONEY, Philadelphia.

To report to the Commanding General, Northeastern Department, from Boston, Capt. R. P. SMITH, Philadelphia; Lieut. S. H. KELLER, Pittsburgh; from Camp Devens, Capt. I. E. FREYMAN, Weatherly.

To Walter Reed General Hospital, D. C., from Camp Crane, Lieut. E. L. WHISTLER, Carlisle.

The following orders have been revoked: *To Hoboken, N. J.*, from Fort Hancock, Lieut. J. M. MONAGHAN, Minersville. *To Richmond, Va.*, for instruction, from Fort Oglethorpe, Lieut. R. S. HINCHMAN, McKeesport. *To West Baden, Ind.*, from Camp Crane, Lieut. B. FULTON, Pittsburgh.

Philippine Islands

To San Francisco, Calif., from Philippine Islands, Major E. T. B. WEIDNER.

Rhode Island

To Cooperstown, N. Y., from Mineola, Capt. A. W. STEVENSON, Newport.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Walter Reed General Hospital*, from Walter Reed General Hospital, Lieut. W. J. O'KEEFE, Providence.

South Carolina

To Camp Lee, Va., from Camp Greene, Capt. E. F. ROSS, Anderson.

Tennessee

To Asheville, N. C., from Fort Oglethorpe, Lieuts. C. G. GRIFFIN, Nashville; E. A. GILBERT, St. Elmo.

To Camp Hancock, Ga., as tuberculosis examiner, from Waynesville, Capt. J. O. WOODS, Newport. Base hospital, from Fort Oglethorpe, Capt. R. W. DAKE, Nashville.

To Camp Jackson, S. C., base hospital, from Fort Oglethorpe, Lieut. H. S. SHOULDERS, Springfield.

To Camp Joseph E. Johnston, Fla., base hospital, from Fort Oglethorpe, Lieut. H. O. FLETCHER, Chattanooga.

To Denver, Colo., from Fort Oglethorpe, Lieut. H. P. CONLEY, Memphis.

To Fort Benjamin Harrison, Ind., from Fort Oglethorpe, Lieut. T. D. CLOYD, Mosheim.

To Fort Leavenworth, Kan., from Columbus Barracks, Capt. J. P. SCHOLL, Nashville; from Fort Oglethorpe, Capt. G. A. HATCHER, Nashville.

To Hoboken, N. J., from Camp Crane, Capt. J. H. KING, Chestnut Mound.

To Lake Charles, La., Gerstner Field, as flight surgeon, from Mineola, Capt. G. E. CAMPBELL, Elizabethtown.

To Walter Reed General Hospital, D. C., from Camp Custer, Lieut. H. O. ANDERSON, Williamsport.

The following orders have been revoked: *To Fort Riley*, base hospital, from Fort Oglethorpe, Capt. O. J. PORTER, Columbia. *To report to the Commanding General*, Southeastern Department, from Fort Logan, Lieut. W. H. NILES, Tellico Plains.

Texas

To Camp Bowie, Texas, base hospital, from Fort Oglethorpe, Lieut. A. C. ROGERS, Odell.

To Camp Hancock, Ga., from Camp Greene, Lieut. T. M. JARMON, Terrell.

To Camp Henry Knox and to Camp Zachary Taylor, Ky., with the board examining the troops for cardiovascular diseases, from Fort Oglethorpe, Major L. V. DePEW, San Antonio.

To Camp MacArthur, Texas, base hospital, from Fort Oglethorpe, Lieut. W. S. LORIMER, Handley.

To Camp Shelby, Miss., for instruction, from Camp Crane, Major W. M. WOLF, San Antonio.

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Capt. W. B. HUNTER, Fort Bliss.

To Dallas, Texas, from San Antonio, Lieut. D. A. MOHLER, Dallas.

To Fort McHenry, Md., for instruction, from Fort Oglethorpe, Capt. M. W. SHERWOOD, Temple.

To Fort Sill, Okla., base hospital, from Fort Oglethorpe, Capt. J. H. BRICE, Lamesa.

The following orders have been revoked: *To Camp Abraham Eustis, Va.*, from Camp Custer, Lieut. L. PENROD, Gonzales. *To Dallas, Texas*, from San Antonio, Lieut. R. M. MILNER, Yoakum. *To Camp Shelby, Miss.*, for instruction, from Camp Crane, Major W. M. WOLF, San Antonio.

Utah

To Camp Hancock, Ga., as tuberculosis examiner, from Fort Oglethorpe, Lieut. G. W. GOINS, Toolle.

Virginia

To Camp Devens, Mass., base hospital, from New Haven, Lieut. G. A. L. KOLMER, Salem.

To Camp Hancock, Ga., from Camp Lee, Capt. E. W. YOUNG, McKenney.

To Fort McHenry, Md., for instruction, from Fort Oglethorpe, Capt. J. M. ROBINSON, Danville.

To Hoboken, N. J., from Fort Oglethorpe, Lieut. J. L. HANKINS, Fordwick.

To report to the Commanding General, Northeastern Department, from Boston, Lieut. J. A. LAFFERTY, McKees Rocks.

Washington

To Fort Leavenworth, Kan., from Camp Lewis, Major A. P. CALHOUN, Seattle; from Fort Oglethorpe, Lieut. J. HEHIR, Sedro-Wooley.

To Fort George Wright, Wash., Capt. A. A. MATTHEWS, Spokane.

To San Diego, Calif., Rockwell Field, as assistant to flight surgeon, from Mineola, Capt. C. W. BEELER, Seattle.

West Virginia

To Asheville, N. C., from Camp Devens, Capt. G. H. BARKSDALE, Charleston.

To Boston, Mass., for instruction, from Camp Beauregard, Capt. J. C. SCHULZ, Huntington.

To Camp Crane, Pa., from Hoboken, Lieut. J. C. LAWSON, Logan.

To Camp Hancock, Ga., base hospital, from Fort Oglethorpe, Lieut. W. S. Crawford, Follansbee.

To Camp Meade, Md., from Camp Gordon, Major E. DAVIS, Charleston.

To Edgewood Arsenal, Md., as orthopedic surgeon, from Fort Oglethorpe, Lieut. E. B. HENSON, Charleston.

To Fort Leavenworth, Kan., from Camp Lee, Lieut. R. DODSON, Spencer.

Wisconsin

To Camp Gordon, Ga., with the board examining the troops for cardiovascular diseases, from Fort Oglethorpe, Lieut. R. E. FITZGERALD, Cudahy.

To Camp Sherman, Ohio, base hospital from Boston, Capt. J. W. POWERS, Burlington.

To Camp Wheeler, Ga., base hospital, from Camp Crane, Lieut. O. E. ISHMAEL, Mount Horeb.

To Fort Sheridan, Ill., from Fort Oglethorpe, Lieut. P. C. HODGES, Madison.

To Fort Snelling, Minn., from Fort Oglethorpe, Lieut. W. G. SEXTON, Marshfield.

To West Point, Miss., Payne Field, as flight surgeon, from Mineola, Major C. W. ANDREWS, Waupaca.

ORDERS TO OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE

Asst. Surg. M. C. EDMUNDS, proceed to the Reedy Island Quarantine Station for temporary duty.

Asst. Surg. M. F. HARALSON, proceed to Florence, Ala., for inspection of sanitary work now being carried on by the Service.

Acting Asst. Surg. J. J. DURRETT, proceed to Washington for conference relative to construction of a sewage disposal plant at Newport News, Va.

Acting Asst. Surg. I. R. GORROV, proceed to Washington, D. C., for conference relative to influenza work in the state of Ohio.

Sanitary Engr. C. N. HARRUB, relieved at Jacksonville, Fla., proceed to Columbus, Ga., for duty in extracantonment sanitation.

Scient. Asst. SEVERANCE BURRAGE, relieved at New London, Conn., proceed to Ayre, Mass., for duty in extracantonment sanitation.

Scient. Asst. WALLACE PURRINGTON, relieved at New London, Conn., proceed to Portsmouth, N. H., for duty in extracantonment sanitation.

Chief Sanitary Insp. W. H. GILLETTE, relieved at Jacksonville, Fla., proceed to Atlanta, Ga., for duty in extracantonment sanitation.

Chief Sanitary Insp. JOHN F. GORDON, relieved at Portsmouth, N. H., proceed to Raleigh, N. C., for duty in extracantonment sanitation.

Chief Sanitary Insp. L. L. JACKSON, relieved at Jacksonville, Fla., proceed to Columbus, Ga., for duty in extracantonment sanitation.

Chief Sanitary Insp. W. J. JOYCE, relieved at New London, Conn., proceed to Raleigh, N. C., for duty in extracantonment sanitation.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Frank H. Pritchard, Colton, who has been seriously ill with heart disease following influenza, is reported to be convalescent.——Dr. James B. Cutter, Watsonville, has been appointed executive surgeon at the Southern Pacific Hospital, San Francisco.——Dr. Ernest Crutcher, Los Angeles, has been appointed special representative of the state board of health to take charge of the influenza situation at Blythe in the Imperial Valley.

County Medical Society Protests Discharge of Reserve Officers.—The San Diego County Medical Society has protested to the adjutant-general of the state of California regarding the manner in which physicians serving with the Medical Corps are being discharged from service on telegraphic orders. The protest states that:

Whereas, medical officers who gave up good homes and lucrative practices to enter the medical reserve corps are being discharged from the service on telegraphic orders from Washington without proper notice or customary privileges due an officer.

This council hereby protests against this manner of discharge and asks that Adjutant-General Borree communicate with the proper authorities in Washington and have such irregularities corrected.

ILLINOIS

Disqualified Physician Fined.—Dr. Samuel R. Harwood of East St. Louis, whose license to practice medicine and surgery in the state of Illinois was revoked some three months ago, has promised the authorities of St. Clair County that he will leave the state if they will permit him to plead guilty to one of the eight indictments returned against him by the grand jury of that county and pay a fine of $500 for obtaining money under false pretenses. His offer has been accepted by the state's attorney. The eight indictments returned against Harwood for practicing a confidence game and obtaining money under false pretenses were returned by the grand jury of St. Clair County immediately following the revocation of his license.

Licenses Revoked.—At a meeting of the Department of Registration and Education of the State of Illinois, held in Chicago, Dec. 9, 1918, the license of Franklin J. Oshay, Ladd, who holds license No. 10724, issued by the state board of health, Nov. 15, 1892, to practice medicine and surgery in all their branches in the state of Illinois, was revoked. The charges against Dr. Oshay were that he was an habitual drunkard, and was careless in the writing of prescriptions for habit forming drugs. The license of August M. Unger, Chicago, No. 10546, issued by the state board of health, April 7, 1892, was also revoked. He was charged with unprofessional conduct to young women who answered an advertisement for an office girl. He was charged with telling them that under a recently passed state law all office girls working for physicians were required to submit to a physical examination before beginning their work.

MARYLAND

Personal.—It is reported that Brig.-Gens. J. M. T. Finney and W. S. Thayer have been ordered back to the United States from France.——Lieut. J. Galen Skilling, surgeon in the First Battalion, Twenty-Sixth Infantry of the First U. S. Army, formerly from Cumberland, has been reported as missing since November 7.——Health Commissioner John D. Blake has announced the appointment of Dr. Robert G. Lumpkin of Roland Park, as throat inspector for the health department. Dr. Lumpkin succeeds Dr. G. H. Woltereck, who resigned.

Bon Secours Hospital Opened.—The new Bon Secours Hospital in Baltimore, given by Mr. and Mrs. George C. Jenkins to the sisters of that order, was formally opened, December 21, by Cardinal Gibbons who dedicated the building. The new hospital is provided with the latest and most perfect appliances required in hospital service and will enable the sisters to attend surgical operations in their own hospital. Mother Urban, superior of the Bon Secours Convent, is directress and the following medical men of Baltimore are members of the staff: Dr. Thomas R. Brown, Dr. E. B. Freeman, Dr. Charles O'Donovan, and Dr. E. H. Gaither. The surgical staff is composed of Drs. Alexis McGlannan, J. C. Pound, J. K. Seegar, and M. Kahn.

MASSACHUSETTS

Want Physician for Health Commissioner.—At a meeting of the Somerset Medical Society, held December 12, a resolution was adopted recommending a change in the department of health of the city by abolishing the present board of health and establishing in its stead, a graduate in medicine as full-time commissioner of health.

Personal.—Dr. Henry M. Smith, Lee, has been appointed associate medical examiner (coroner) of Berkshire County, to succeed Dr. John J. Hassett, deceased.——Dr. Esther M. E. Sundelof, Boston, has been appointed assistant physician of the City Hospital, roentgen-ray service.——In the case of "Dr." David Wagner, Springfield, who was said to have been found guilty of performing a criminal operation causing the death of Nellie Osham, and sentenced to five years' imprisonment in the state prison at Charlestown, the supreme court has overruled the exceptions, and the authorities have been ordered to arrest Wagner that he may serve his sentence.

NEBRASKA

Action Regarding Influenza.—At a meeting at the state capitol building in Lincoln, Tuesday, December 17, called by the state board of health and presided over by the epidemiologist of the state board, Dr. W. H. Wilson, important action was taken and recommendations made regarding influenza, which had assumed a serious stage throughout the state. The meeting was addressed by the governor and by Dr. W. F. Wild, head of the state board, and a committee was appointed consisting of Dr. Wild, Dr. A. J. Jenison, a member of the state legislature, and Superintendent A. H. Waterhouse of the Omaha public schools, which made the following recommendations: That local health boards be organized as provided by law in all counties, cities and villages where such do not now exist and that all boards enforce all present laws relating to contagious diseases, especially as applied to the present epidemic of influenza, and where such local boards fail to organize or fail to carry out the laws the state board establish a health organization and carry out the laws at the expense of such communities; or if local organizations are unable to cope with the situation that outside help be obtained. Each community is urged to organize a corps of nurses to be trained along practical lines, and complete reporting of cases is enjoined on physicians. Public schools should adopt medical inspection, or, in the absence of that, the teachers are to send home every child showing signs of illness with recommendation to parents to consult a physician. All gatherings for purposes of pleasure and all other unnecessary gatherings should be discontinued. Influenza is to be considered and treated as a quarantinable disease under present state quarantine regulations.

NEW YORK

Personal.—Dr. Arnold A. Samorini, Schenectady, sailed for Italy, December 3, to engage in Red Cross work.

Oral Hygiene Number.—*Health News*, the monthly bulletin of the New York State Department of Health, for November is devoted to the subject of oral hygiene. It contains articles

on focal infections, by Meyer L. Rhein; importance of the care of the deciduous teeth, by Frederick A. Keyes; dental hygiene in the Rochester schools, by Harvey J. Burkhart; rational mouth hygiene, by Alfred C. Fones, who presents an illustrated article on how to brush the teeth, and an article on tooth-brush drill, by Albert H. Stevenson, besides editorial and miscellaneous matter.

New York City

Personal.—Charles F. Craig, commanding officer of the Army Laboratory School, at Yale University, New Haven, Conn., who met with a painful elevator accident recently in which he fractured his left leg and dislocated the left patella, is reported to be convalescing.——The Distinguished Service Medal was awarded, October 11, to Col. Louis M. Maus, M. C., U. S. Army, Washington, D. C., retired, by direction of the President, for "Specially meritorious service on the Belle Fourche River, N. D., on Nov. 5, 1877, in that while serving with a detachment suddenly surrounded by an overwhelming force of hostile Sioux Indians he succeeded in extricating the party from the most perilous position."

The Cartwright Prize.—Announcement is made by the Association of the Alumni of the College of Physicians and Surgeons in the City of New York of its biennial Cartwright Prize of $500 to be awarded at Commencement, 1919. Competitive essays must be presented on or before April 1, 1919, typewritten, in English, and accompanied by the usual safeguarding device or motto. They must contain records of original investigations made by the writer. In 1920 the Alumni Prize will be offered, the requirements for which are the same as the Cartwright Prize, excepting that competition is restricted to alumni of the College of Physicians and Surgeons. Essays offered for the Cartwright Prize should be sent to Dr. Henry E. Hale, secretary of the association, at 64 West Fiftieth Street, New York City.

New Diagnostic Hospital.—The New York Diagnostic Society has been organized by Dr. M. Joseph Mandelbaum. In a few days ground will be broken for the establishment of the first hospital of the Diagnostic Society, at 125 West Twenty-Second Street, which will be known as the West Side Branch of the Diagnostic Clinics of the Academy of Diagnosis. The ground and building represent an investment of $250,000. The building will be six stories and basement in height, and will be a model in regard to equipment for diagnostic tests. The society has now a membership of more than 400, and the officers are Dr. M. Joseph Mandelbaum, president; Dr. Monroe Bradford Kunstler, vice president; Lesser B. Grossel, secretary; J. Maxwell Van Dyke, treasurer, and David Frankel, president of the board of lay governors.

GENERAL

Bequests and Donations.—The following bequests and donations have recently been announced:

Episcopal Hospital and Visiting Nurse Society, Philadelphia, each $1,000 by the will of Edmond A. Souder.

Mount Sinai Hospital $10,000, Hebrew Benefit and Orphan Asylum and Montefiore Home each $1,000, and Lenox Hill Hospital, New York City, $500 by the will of Edward Oppenheimer.

New Public Health Officers.—At the annual meeting of the American Public Health Association held in Chicago, December 8 to 11, New Orleans was selected as the next place of meeting and the following officers were elected: president, Lee K. Frankel, New York City; vice presidents, Col. John W. S. McCullough, Toronto, Ont.; Col. Victor C. Vaughan, Ann Arbor, Mich., and Dr. John D. Robertson, Chicago; secretary, A. W. Hedrick, Boston; treasurer, Dr. Guilford H. Sumner, Des Moines, Iowa, and executive committee, Drs. Allan J. McLaughlin, U. S. P. H. S., Washington, D. C.; Charles J. C. O. Hastings, Toronto; Peter H. Bryce, Ottawa; John N. Hurty, Indianapolis, Ind., and William C. Woodward, Boston.

The Work of the Rockefeller Foundation.—George E. Vincent, president of the Rockefeller Foundation, outlined recently the plans of the foundation which included an expedition to Central and South America headed by Major-Gen. William C. Gorgas, formerly Surgeon-General, U. S. Army, to conquer yellow fever which now springs from a few small areas in Central and South America; the operation of a medical university in Peking, China, which is under construction with a cost of $6,000,000, and will be open in 1920, and which will contain eighteen university buildings, forty faculty residences, and a hospital with 200 beds, and a medical school soon to be begun at Shanghai. Subsidies are to be granted to existing missionary hospitals which will be standardized and offer internships for the university. Clinical stations and subhospitals will be established over China. For this work a total expenditure of $10,000,000 is expected, with an additional $250,000 to $500,000 annually for support.

Federal Aid in Rural Health Conditions.—As the result of careful study of rural health conditions, Representative Lever has come to the conclusion that rural health work should be conducted on the same basis as the Lever Extension Plan of promoting agricultural development. He has, therefore, introduced a bill embodying the principle of federal aid and advocates the prompt passage of this as a vital measure of national reconstruction. He calls attention to a bulletin just published by the United States Public Health Service embodying the results of a sanitary survey recently made. In this survey over 50,000 farm houses were visited in fifteen different counties. Of these less than 2 per cent. were equipped for the sanitary disposal of human excreta. More than two-thirds (68 per cent.) used a water supply which was obviously exposed to potentially dangerous contamination from privy contents or from promiscuous deposits of human excreta. In the majority of these the water was also exposed to pollution from stable yards and pig-sties. Only one third of the dwellings were effectively screened during the summer season, to prevent flies, which had free access to nearby deposits of human and other filth, from entering dining rooms and kitchens and contaminating foods intended for human consumption. The bill as introduced, provides an appropriation of $250,000 for the first fiscal year, to be allotted on the half and half plan to the several states, and an appropriation of an additional $250,000 each fiscal year thereafter until a continual appropriation of $1,000,000 is reached.

FOREIGN

Influenza in Switzerland.—The febrile epidemic in Switzerland has kept up so that the annual meetings of the Swiss Neurologic Society and of the Société médicale de la Suisse romande, scheduled to be held in October and November, were postponed *sine die*.

Census of War Disabled.—The prefects throughout Italy have been ordered by the government to collect from every community the data regarding disabled soldiers in their precincts injured in the war. Not only the names and numbers but the pensions paid, the kind and amount of reeducation, the artificial limbs provided, and other details of each individual case are to be compiled and when collected by the prefects are to be sent to the headquarters of the rehabilitation work for the province.

Deaths in the Profession Abroad.—Prof. **P. Dunant** of the University of Geneva, aged 68. He occupied the chair of hygiene from its foundation to his retirement in 1889, and published numerous works on medical statistics, hygiene and demography, and always took a leading part in matters affecting the public health and welfare. He was the brother of Henri Dunant, the founder of the Red Cross.——Dr. **J. Bruchi**, instructor in clinical surgery and operative medicine at Ravenna, aged 45.——Prof. **G. Basile**, assistant to the chair of nose and throat diseases at the University of Catania, and a writer on this specialty.

Committee for Revision of French Codex.—The Commission du Codex has just been appointed. It consists mainly of professors of pharmacy in different universities, with the chief of the pharmacy service for the state hospitals. The director of the system of state higher education is president of the commission, and Professor Roger, dean of the Faculté de médecine of the University of Paris, professor of experimental pathology, is vice president. The list includes also Professors Carnot, Moureu and Desgrez, of the chairs of therapeutics, pharmaceutical chemistry and medical chemistry at the University of Paris, E. Roux, director of the Pasteur Institute, and others to a total of twenty-three.

Agitation for a Minister of Health in France.—The lack of organization and coordination of the various agencies in charge of the public health service has been rendered particularly apparent by the recent events in France, and a concerted movement is now under way to have the public health and hygiene service reorganized as a government cabinet department. Among the forces actively at work to secure this is the Comité national de l'éducation physique et de l'hygiène sociale, the president of which is a member of the lower house from Paris. They appeal to organized industries, societies, associations of any and every kind, to sign and forward to the headquarters of this organization a brief petition which has been widely published, setting forth in half a dozen lines the evils of the present scattering of the public health agencies through so many different government

departments, the wasting of effort and the overlooking of important matters between them.

Appeal from the Serbian Red Cross.—The *Policlinico* of November 17 brings an urgent appeal from the president of the Serbian Red Cross for aid to save the population which has been reduced by nearly one half, and which needs donations of clothing, underclothes, cloth, thread, needles, shoes, fresh or conserved foods, tea, sugar, condensed milk, soap, medicines and hospital supplies, besides cash. "Only by prompt donations of the kind," he says, "will it be possible to tide the populace along till the better days to follow the victory, and which the people have so fully and richly deserved. The whole Serbian nation to the depths of its great heart," he adds, "will cherish the deepest gratitude and remembrance of all those who manifest to them in their time of need sentiments of sympathy and altruism." Contributions can be sent to the R. Consolate of Serbia at Salonico or to the R. Console Generale di Serbia at Rome, Italy, via Poli, 25, addressed to the Serbian Red Cross or Croce Rossa Serba.

Two Hundred and Fiftieth Anniversary of Birth of Boerhaave.—Herman Boerhaave was born near Leyden in Holland, Dec. 31, 1668, and the profession in the Netherlands is making great efforts to celebrate the 250th anniversary of this date. In 1709 he was made professor of medicine and botany at the University of Leyden, and students flocked to him from all over Europe while he was remarkably successful as a practitioner of medicine. A story is told that he received a letter from a high official in China addressed merely "Dr. Boerhaave, Europe." The Surgeon-General's Catalogue devotes over two pages to the lists of his works and translations of them into different languages, and biographies and other works about him. He is generally considered to have inaugurated the era of scientific medicine. His "Aphorisms Concerning the Knowledge and Cure of Diseases" and his "Treatise on the Virtue and Energy of Medicines" were his principal works, but he also published several on "Venus Sickness," disease of the eyes, cancer, gallstones, etc. There is to be a festival meeting at the University of Leyden, the scene of his labors, and an exhibition of Boerhaaviana is to be open to the public for a month in the public museum. The National Medical Association and the city of Leyden have cooperated to make the celebration a worthy one. A recent bequest to the city has added materially to its collection of Boerhaaviana.

LONDON LETTER

LONDON, Nov. 26, 1918.

Plans to Check Venereal Disease on Demobilization

The National Council for Combating Venereal Diseases has brought forward proposals for meeting the danger of a large increase when the troops are demobilized. It urges that though great progress has been made in the campaign against venereal diseases, the results are lamentably inadequate, and unless strong measures are taken, there will be grave danger to the public health. There will be about 300,000 men of the army and navy under treatment and infective on demobilization. The incidence of these diseases in the army, where instruction, treatment and discipline combine to reduce infection, is put at only 2 per cent.; in the adult civilian population, where those influences do not obtain, it is estimated at nearly 20 per cent. It is urged that immediate steps must be taken to prevent the spread of disease to wives, families and others. The council makes these recommendations: 1. The Local Government Board should authorize the appointment of whole time venereal officers (a man and a woman) on the staffs of the medical officer of each county or county borough. The present hospital accommodation should be supplemented by special clinics under the supervision of such venereal officers in every town of more than 10,000 inhabitants, and also in the county boroughs, such clinics to be open for continuous and early treatment for both men and women. The military authorities are asked to free immediately as many venereal specialists as the Local Government Board may require, in order that the time before demobilization may be used to establish the clinics to be available early in the new year. 2. Hospitals and medical schools should be requested to arrange special graduate courses for the training of medical women in the modern methods of treatment. A strong appeal is made to medical women to specialize in this subject. 3. Some means should be devised to encourage physicians to diagnose venereal disease in patients and to give early preventive treatment. 4. The army act should be so amended as to enable infective men to be retained pending the completion of treatment. 5. It should be made a statutory obligation for every individual suffering from venereal disease to obtain and to continue treatment until cured. 6. The Local Government Board should consider immediately whether some form of confidential notification of infective cases may be adopted under existing powers, and whether at a later date fresh powers may be obtained from Parliament to secure continuous treatment. 7. The minister of munitions should give instructions that all men and women working for national and controlled firms should receive adequate instruction from responsible physicians. 8. An adequate number of women police should be appointed, and the organization of voluntary women patrols should be increased. 9. Social organizations should increase their efforts to provide recreation under healthy conditions for the youth of the country, especially during the present period of rejoicing.

Simulated Diabetes

A business man, a native of Warsaw, was prosecuted and pleaded guilty of causing a solution of sucrose to be injected into his bladder with view to being rejected on medical examination for the army. He was fined $250. A few other cases of simulated disease with the same object have occurred during the war, but most, if not all, the persons concerned were not English, but foreigners or of foreign extraction.

Sir Hermann Weber

Sir Hermann Weber, M.D., F.R.C.P., has died at his residence in London in his ninety-fifth year. He was a remarkable example not only of longevity but also of excellent health and vigor in old age. He practiced until the age of 80, and in the present year contributed a most interesting article to the *British Medical Journal* on the "Influence of Muscular Exercise on Longevity," which followed out the principles laid down in his essay on "Prolongation of Life." He was able to refer to himself as a marked example of his doctrine. He attributed his vigor at this extreme age to his practice of spending daily two or three hours in the open air and walking as a rule 30 and frequently 40 or 50 miles a week. He was the son of a German father and Italian mother. He was educated at Marburg and afterward at Bonn, where he graduated in 1848. His desire to read Shakespeare in the original led him to study English. He came to England, where he was appointed house physician at the German hospital, and married an English woman in 1854. After a period of study at Guy's hospital he became M.R.C.P., and was elected F.R.C.P., four years later. Among his circle of friends were the eminent physicians of a former generation, Addison, Edmond Parkes, Wilson Fox and Hilton Fagge. He was one of the pioneers of the open air treatment of consumption. Not without protest from the more old-fashioned physicians, he sent his patients to winter in the high valleys of the Engadine. He was himself devoted to mountain climbing, and in the interests of his patients explored the Swiss Tyrolese and Italian Alps. His affection and admiration for Parkes led him to present the College of Physicians with the sum of $15,000 to be awarded every third year for the best essay on some subject connected with tuberculosis. He contributed articles on the treatment of phthisis to Quain's Dictionary and Allbutt's System. His unique knowledge of health resorts was embodied in a volume entitled the "Mineral Waters and Health Resorts of Europe" which was later replaced by "Climatotherapy and Balneotherapy," written in association with his son, Dr. F. Parkes Weber. Throughout the war his sympathies were cordially and wholly with his adopted country, where he had worked for seventy-five years. His younger son and all his grandsons fought in the war, and one was killed at Ypres.

Medicine in War

The fourth annual report of the Medical Research Committee has just been published. This committee owes its origin to Mr. Lloyd George, who founded it in connection with the national health insurance scheme. During the war, the committee has given its advice and services to the army in large measure, and consequently the present is largely a war report. Much of the knowledge gained in war will be available for peace, not only by means of the medical history of the war that the committee is producing, but also by means of published papers and researches. Three facts, the committee thinks, stand out today in the domain of medical research. The first is the awakened interest in scientific work and increased recognition of the value of medical research. The second is the remarkable triumph achieved by the bacteriologist in this war. Thanks to his labors, especially in the direction of preparing vaccines, thousands of

cases of illness have been prevented and thousands of lives saved. Finally, for the first time the important bearing of physiology on general medicine has received adequate recognition. "The violences offered to the human body in warfare —whether through exertion and exposure, by terror or excitement, in physical damage by lead or steel, or in chemical attacks on it by poison, and not least through the incredible stresses of flying high and fighting in the air—all these have brought many new and urgent calls for precise physiological knowledge."

The Casualties of the War

The following are the total British casualties of the war, including Dominion and Indian troops. The number killed (including those who died from wounds or other causes) is 658,704. The number wounded is 2,032,142. The number missing, including prisoners, is 359,145. In addition there have been 19,000 deaths from various causes among troops not forming any part of the expeditionary forces. Among the wounded are included those who have been disabled on account of illness.

British Prisoners and German Physicians

The recent report of the government committee, presided over by Mr. Justice Younger, on the treatment of British prisoners of war shows the same abominable cruelty with which we have been familiar since the beginning of the war. Referring to the treatment of the men who were compelled to work in mines, there is this passage: "We come finally to one of the worst points, and at the same time one of the most universal, in the management of the mining camps. The provision made for medical attention in cases of sickness and accident is slight at best, although it might in these instances be considered sufficient if it were properly administered. Each camp is visited once or twice a week by a local civilian physician, who is supposed to be responsible for the medical care of the kommando. He is not called on to treat serious cases, which are passed to the nearest regular hospital. But in all mining work, and more especially in the salt mines, constant vigilance is necessary to prevent even the lighter cases from developing serious consequences. Small accidents are common, the men are in no condition of health to be able to disregard them, and in the salt mines they suffer perpetually from eye trouble and from a distressing kind of abscess, both of which are liable to become dangerously infected in the conditions of their work. In many places the physician is clearly convicted of carelessness and perfunctory treatment." The indignation produced in the medical profession in this country by such disclosures is shown by the decision of the council of the Royal College of Surgeons to omit the universities of Germany and Austria from the list of schools from which certificates of professional education should be received. A similar decision seems about to be taken by the Royal College of Physicians.

PARIS LETTER

Paris, Nov. 28, 1918.

Traumatic Shock

The Société de biologie has been devoting some of its meetings to the discussion of the biology of war. The first meeting of this kind was given over to the study of shock and of anesthesia of wounded men in a state of shock.

Dr. W. B. Cannon of the American army, professor of physiology at Harvard, presented an interesting report on this subject. He said that traumatic shock is a general somatic state, occurring after wounding and characterized by persistent low arterial pressure, accelerated pulse rate, pallor, sweating and rapid superficial respiration. The findings in shock may be summarized as follows: (1) Persistent low arterial pressure. This depression is particularly pathognomonic of shock; in fact, it determines the degree of shock. (2) Hyperglobulia in the capillaries. The difference in the number of erythrocytes to be found in the capillaries and in the veins may be as high as 2,500,000 per cubic millimeter. (3) The body temperature varies with the degree of shock. The blood pressure is low when the victim of shock is cold, but rises as the patient warms up. (4) Reduction of the alkaline reserve in many cases of shock. Often this reduction is sufficiently great to create an acidosis, as defined by Van Slyke. (5) Correlation between the rate of reduction of the alkaline reserve and the degree to which the arterial blood pressure is lowered in an individual who is in the state of shock. (6) Difficulties in the regulation of the circulation. If the blood pressure remains low for a long time, nothing can bring about an elevation in pressure. (7) Marked sensibility of the shock victim to anesthesia with ether or chloroform, affecting the already present low pressure unfavorably. (8) Tolerance for nitrous oxid and oxygen as an anesthetic, without fall of blood pressure.

Dr. Cannon is of the opinion that shock is not due primarily to a loss of vasoconstrictor tonus, nor to fat embolism, but that it is the result of tissue traumatism.

TREATMENT

As far as the treatment of shock is concerned, loss of body heat must be prevented and the normal temperature must be restored. Keep the patient covered; give him hot drinks, apply hot water bottles to the body surface, use plenty of covering, even warm air. Raise the arterial blood pressure as soon as possible so as to avoid the harm which may ensue from lack of oxygen. Blood transfusion may be resorted to because that procedure adds oxygen carriers to the circulation. In cases of trauma to an extremity, apply a tourniquet as close to the wounded area as possible, amputate at once just below it and before taking it off. If the tourniquet applied for the arrest of hemorrhage has to be left in place a long time, it should be applied as near to the periphery as possible. The surgeon must decide whether a limb should be conserved or sacrificed, being guided by the viability of the member, the possibility of losing the isolated portion through gangrene, and the danger to the organism as a whole from the absorption of retention products. If ether is used as an anesthetic to operate on a shock patient, then, as soon as anesthesia is obtained, every effort should be made to raise the blood pressure by transfusion or by injection, repeating these procedures during the operation. Preference should be given to nitrous oxid and oxygen anesthesia, in proportions of three to one, preceded by a hypodermic injection of morphin. Care must be taken to avoid profound anesthesia and cyanosis.

NATURE OF SHOCK

Professor Pierre Delbet stated that this meeting would be historic in that it was the first time that biologists, physiologists, internists and surgeons had met together and agreed almost unanimously on the toxic origin of shock. He considered it fortunate that Dr. Cannon, as a physiologist, and hence free from a surgeon's prejudices, had reached the same conclusions as had been presented by Delbet himself as well as by Dr. Quénu. Apparently the victims of shock are poisoned with toxins which may cause death either by rapid action on the nervous system or by acting on the liver or other organs. These poisons do not combine fixedly with the nerve cells; they are eliminated rapidly, and when fresh doses of toxins do not reach these cells, a rapid cure follows. Irreparable damage to the liver is done only after the lapse of some time. There is a period during which a cure can be effected by preventing a fresh supply of toxin from reaching the nervous system, that is, by eliminating the source of the poison. The exhaustion theory of shock precludes surgical intervention. The rule has been to treat shock patients symptomatically, keeping them warm and giving various injections. The toxic theory of shock, on the other hand, demands surgical treatment, excision or removal of the infectious or toxic focus. Traumatic shock does not contraindicate the operation but calls for it as an emergency measure. However, this does not mean that other means of treatment are useless or ineffective.

Drs. P. Duval and A. Grigaut recalled that the toxic phenomena of primary shock are the direct result of intense and rapid nitrogen disintegration of the traumatized tissues. Under normal conditions the tissues store up a considerable amount of nitrogen products, the result of disassimilation, and it is the retention of these waste products which imparts to them a particular toxicity. Under the influence of trauma, the threshold of nitrogen excretion of that particular cell is lowered, and some of the toxic nitrogen reserve passes out into the circulation.

Dr. C. Vincent limited himself to a discussion of primary traumatic shock, the condition which develops immediately after the wounding, and which is connected either with the wound alone or with certain states which are characteristic of the fighting man and yet are not traumas. In spite of what has been said above, shock is sometimes met with at the regimental first aid posts, hence a careful and thorough examination should be made in every case. The fighting man, especially the infantryman, expends an almost unbelievable amount of energy, which probably paves the way for shock. Experience has shown that after several days of fighting, two thirds of the men in an infantry regiment who are not wounded are in a state of low tension, with a very low blood pressure. Only after four or five days of rest will the pres-

sure go over 12. It is quite likely that many of the men in combat are predisposed to shock, because at the time that they are wounded they are so worn out that they are unable to resist it.

Interallied Conference of Scientific Academies

An interallied conference of scientific academies was held in Paris to consider the question of international scientific relations. Delegates were present from the Royal Society of London, the Edinburgh Academy, the National Academy of Washington, the Accademia dei Lincei of Rome, the Académie royale of Belgium, the Imperial Academy of Tokio, and the Academies of Greece, of Serbia, Portugal, Roumania and Brazil. These delegates met with the French members at the Institut, in the assembly hall of the Académie française.

Influenza Contracted in Military Service

The ministry of war has issued a circular stating that influenza is a contagious disease, hence the widow of a soldier dead of influenza contracted while in service is entitled to a pension.

Return of Prisoners of War

For a long time many prisoners of war, military and civilian, have been returning to Paris from Germany. Many of them are in an unbelievable state of mental and physical depression. It is only too apparent that they have been suffering frightfully from hunger. Some of them seem to have fallen into the lowest depths of misery. Most of them are clothed in rags and are shod with wooden shoes. The civilian prisoners apparently have been subjected to greater privations and hardships than the military prisoners.

The military authorities of Paris have taken measures to expedite the distribution of the military prisoners in various hospital centers where they report for physical examination, which is very important if the spread of contagious diseases is to be avoided. A large number of centres de désinfection have been installed in Paris, especially at the Grand-Palais.

M. Mesureur, directeur de l'Assistance publique, stated that 4,000 of the whole number of beds requisitioned by the military authorities will be held for those soldiers who have or who may contract tuberculosis. There are also 1,200 beds provided in special barracks.

Spanish Medical Mission to Paris

A Spanish medical mission, headed by Professor Martinez Vargas has arrived in Paris. They are to deliver a series of lectures at the Paris medical faculty.

Deaths

Dr. Gustave Bouchardat, professeur agrégé in the Paris medical faculty and honorary professor in the school of pharmacy, is dead, aged 54 years. He has been a member of the Académie de médecine, section of physical and medical chemistry, since 1882. His published works are well known in chemical circles. He specialized on the sugars, caoutchouc and synthetic camphors.

Dr. Paul Puech, adjunct professor of obstetrics in the medical faculty of Montpellier is dead.

Gonorrhea from Military Standpoint

This subject was discussed at the recent meeting of the Congrès d'urologie. Dr. J. Janet of Paris stated that there is no doubt that the number of cases of venereal disease has increased since the beginning of the war, but when the number of soldiers in service is considered, these figures are not so startling after all. At the beginning of the war these diseases occurred more often in the zone des armées than in the interior; the opposite is now the case since the institution of sanitary measures in the former and in the zone des étapes. Gonorrhea among combatant troops can be treated only by means of balsams, the injections being resorted to during rest periods. In the evacuation and base hospitals, the customary treatment is employed. Abortive treatment is successful in two thirds of the cases, provided that it is instituted within twelve hours of the appearance of the discharge. When the treatment is undertaken later than this, success is less apt to be obtained. The urethral lesion is treated by means of injections of potassium permanganate, anterior in cases of anterior urethritis, and throughout the entire urethra if all of the canal is involved, in progressive doses from 0.05 to 0.25 gm. per thousand, depending on the acuity of the inflammation. In acute cases two injections should be given every day. The injections should be begun at once, no matter what the degree of acuity of the inflammation (in the anterior urethra alone for a day or two in very acute cases of total urethritis). They should never be discontinued when complications arise for, far from being harmful, the injections have a very favorable influence on their evolution.

Dr. F. Cathelin of Paris discussed the importance of this infection from the military point of view and emphasized the necessity of having a more uniform method of treatment of gonorrhea by means of permanganate in the various centers of treatment. A posterior urethritis can be taken care of better after the war. Vaccine treatment is of most value in treating the complications of gonorrhea, but does not have any effect whatever on the disease itself.

Dr. Pasteau of Paris recommended the organization of a genito-urinary service for the armies. He outlined the method of procedure to be followed by these diagnostic and treatment centers, while the troops are moving as well as while they are resting. The treatment of either simple or complicated gonorrhea at the front should be easy and the results satisfactory.

INDIVIDUAL PROPHYLAXIS

So far as prophylactic treatment is concerned, those interested should be impressed with the fact that the precautionary measures provided, whatever they may be, do not absolutely protect them against all infection, either gonorrhea or syphilis. It is far better, from every point of view, to state distinctly that those who have been exposed to infection have always the risk of contracting infection, and that for their own protection, they should seek treatment at once on the appearance of the very first symptoms. The number of centers of treatment should be increased, their permanency insured and their organization improved if better results are to be obtained than is now the case.

Dr. Keyes of New York spoke of the prophylactic methods employed in the American army, and stated that among more than 60,000 cases there were only 2 per cent. of failures.

TREATMENT IN HOME TERRITORY

Dr. Escat of Marseilles discussed the question of the treatment of gonorrhea in home territory and reported the results obtained in 2,254 cases hospitalized at Marseilles; 1,208 of the men had been treated in the barracks infirmary, 692 at the *Centre de dermatologie-vénérologie* and 354 at the *Centre d'urologie*. The majority of these 354 cases were of the complicated variety. He was of the opinion that the simple cases, or those cases which are rebellious to treatment without apparent cause, might be treated best in the regimental infirmaries. The French method of treatment, by means of large injections, advocated by Janet, can be applied easily and systematically as an abortive treatment, a rapid or an intensive treatment.

Vaccines have not yielded conclusive results, thus making discussion on this subject impossible. The complicated cases should be treated in the *Centres d'urologie*. From the standpoint of therapeutics as well as discipline, it might be advantageous to put all these cases in an annex to the *Centre*. In the cases with acute glandular complications, after the inflammatory crisis has passed or after early and thorough incision, treatment by large injections is still the method of choice. In the prostatic cases, Escat stated that nonevacuating massage is useless as well as dangerous. In cases of grave epididymitis, epididymotomy is the method of choice; it facilitates the resumption of the lavages or injections. If the complications are chronic, Escat would return to duty all patients who have a chronic urethritis without stricture. All chronic cases, with follicular fistulas or cowperitis, no matter how severe, should not be invalided but operated on and made fit for duty. In all cases of gonorrhea complicated by other lesions, such as phimosis, venereal warts, soft chancre, hard chancre, etc., marked advantage often may be gained from surgical intervention. In cases of stricture, Escat has always succeeded in making lavage and dilating the urethra with the necessary precautions.

Marriages

HENRY D. THOMASON, Col., M. C., U. S. Army, Commanding General Hospital No. 5, Fort Ontario, N. Y., to Miss Adelina O'Connor, at Fort Ontario, September 25.

JONAS JAY UNGER, Lieut., M. C., U. S. Army, to Miss Nettie Avidan, both of New York City, recently.

CHARLES FOSTER CAMPBELL, Sunbury, Pa., to Miss Grace High, at Dalmatia, Pa., recently.

Deaths

Josiah A. Powless ● **Lieut., M. C., U. S. Army,** Oneida, Wis.; Milwaukee Medical College, 1904; aged 46; an Oneida Indian, and a graduate of the Indian School at Carlyle, Pa.; who went overseas in the summer of 1918, and was on duty with the so-called "Lost Battalion," of the Three Hundred and Eighth Infantry, Seventy-Seventh Division; died, November 6, as the result of a shrapnel wound of the lung received in battle in the Argonne Forest, October 14.

Edward Cross, Kingsville, Texas; Tulane University, New Orleans, 1862; aged 82; a member of the State Medical Association of Texas; assistant surgeon of the Thirty-First Arkansas Rifles, C. S. A., and later brigade surgeon in the Confederate service during the Civil War; formerly physician to the Arkansas School for the Blind, and professor of gynecology in the University of Arkansas, Little Rock; died at his home, about December 8.

Frederick R. Burnham ● San Diego, Calif.; Detroit Medical College, 1877; aged 65; a member of the staff of the Agnew Sanitarium; a director of the Merchants' National Bank, San Diego; for one term harbor commissioner; president of the board of education; president of the local board of health and a member of the state board of health; died at his home, December 11, from pneumonia.

David Coles Carr, New York City; Bellevue Hospital Medical College, 1868; aged 74; at one time a member of the Medical Society of the State of New York; resident physician at the New York Orthopedic Dispensary from 1868 to 1872, and surgeon to the Harlem Dispensary from 1878 to 1882; hospital steward in the Confederate service during the Civil War; died at his home, December 7.

Michael Philip Schuster ● El Paso, Texas; University of Vienna, Austria, 1889; aged 59; a specialist on diseases of the eye, ear, nose and throat; for many years chief surgeon of the American Smelting and Refining Company, El Paso; president of the El Paso County Medical Society in 1905; founder and president of Providence Hospital, El Paso; died at his home, November 15.

Charles Whitney Haddock, Beverly, Mass.; Harvard Medical School, 1879; aged 62; at one time a member of the Massachusetts Medical Society; a specialist on diseases of the eye, ear, nose and throat; ophthalmic and aural surgeon to the Beverly Hospital; medical examiner (coroner) of the seventh district of Essex County; died at his home, December 13.

Edward Glenn Henry ● **Lieut., M. C., U. S. Army,** Oil City, Pa.; University of Pennsylvania, Philadelphia, 1911; aged 29; who was on duty at Camp Greenleaf, Chickamauga, Ga., from August to October, when he sailed for overseas; died in American Red Cross Military Hospital No. 4, Mossley Hill, Liverpool, England, November 7, from pneumonia.

Julius H. Jacobson ● Toledo, Ohio; Toledo Medical College, 1897; aged 39; professor of gynecology and clinical surgery in his alma mater; surgeon to the Lucas County and St. Vincent's hospitals; in 1918 president of the Northern Tri-State Medical Association; died in the Hotel Biltmore, New York City, December 11, from pneumonia.

Arthur Monroe Wooster, Rockford, Minn.; Minneapolis College of Physicians and Surgeons, 1911; Hamline University, 1911; aged 31; a member of the Minnesota State Medical Association, and president of the Wright County Medical Society; died at his home, November 23, from pneumonia following influenza.

Jacob F. Wollam, Jerry City, Ohio; Hahnemann Medical College, Chicago, 1893; aged 60; a member of the Ohio State Medical Association; also a druggist; postmaster of Jerry City during the administration of President Harrison; died at his home, December 5, from heart disease.

William M. Tuller, Bowling Green, Ky.; Cincinnati College of Medicine and Surgery, 1876; aged 70; formerly a member of the city council and mayor of Bowling Green; vice president of the Wood County Savings Bank; died at his home, December 4, from cerebral hemorrhage.

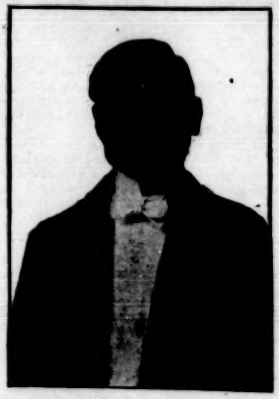
Joseph Paul Aster Maria, Holyoke, Mass.; Montreal School of Medicine and Surgery, 1889; aged 57; a member of the board of health of Holyoke, and city physician in 1902; in 1898 to 1899 a member of the board of aldermen; died at his home, December 7, from pneumonia.

George William Wagner ● Detroit; Jefferson Medical College, 1894; aged 54; visiting physician to the Harper Hospital; assistant to the chair of medicine in Detroit Medical College; a specialist in internal medicine; died, December 15, from pneumonia following influenza.

William Edca Williams, Rockledge, Ga.; University of Georgia, Augusta, 1910; aged 33; a member of the Medical Association of Georgia; president of the Laurens County Medical Society; died at Soperton, Ga., October 16, from pneumonia following influenza.

James Page Massie, Sandidges, Va.; University of Virginia, Charlottesville, 1888; New York University, New York City, 1889; aged 52; professor of obstetrics in his alma mater in 1898 and 1899; died at his home, December 7, from pneumonia following influenza.

Cassar Smith, Olean, N. Y.; University of Buffalo, N. Y., 1891; aged 52; at one time a member of the Medical Society of the State of New York; for twenty-one years coroner of Cattaraugus County; died at his home, December 8, from cerebral hemorrhage.



Died in the Service
IN FRANCE
LIEUT. JOHN W. RENNER, M. C.,
U. S. ARMY, 1890-1918

Charles Edward Bradshaw, Columbus, Ohio; Cleveland-Pulte Medical College, Cleveland, 1899; aged 47; for seventeen years a practitioner of Corning, Ohio; at one time a member of the Ohio State Medical Association; died at his home, December 6.

Edward Bradford Roemelin ● Cincinnati; Medical College of Ohio, Cincinnati, 1904; aged 38; formerly assistant professor of physiologic chemistry in the University of Cincinnati; died at his home, December 8, from pneumonia following influenza.

John Walter Renner ● **Lieut., M. C., U. S. Army,** Hilliards, Ohio; Ohio State University, Columbus, 1912; aged 28; who entered the service, July 2, and was soon sent overseas; is reported to have been killed in action, in Flanders, November 4.

George Chrisman Rodgers ● Elkins, W. Va.; University College of Richmond, Va., 1900; aged 46; superintendent and chief surgeon of the City Hospital, Elkins; died at his home, October 25, from pneumonia following influenza.

Dietrich Ludwig Bartling ● **Lieut., M. C., U. S. Army,** Bloomfield, Neb.; Chicago College of Medicine and Surgery, 1917; aged 31; on duty at Fort Sill, Okla.; died at that post, October 20, from pneumonia following influenza.

Henry T. Watkins ● Olney, Ill.; Hahnemann Medical College, Chicago, 1883; aged 58; founder and proprietor of the Olney Hospital; died on a train between Vincennes and Washington, December 4, from heart disease.

Roscoe Howland Healy, Denver, Colo.; Northwestern University Medical School, Chicago, 1918; aged 24; an intern in Barnes Hospital, St. Louis; died in that institution, December 7, from pneumonia following influenza.

Robert H. Eanes, Taylor, Texas; Tulane University, New Orleans, 1883; aged 63; a member of the State Medical Association of Texas; for twelve years a practitioner of Waco, Texas; died in Taylor, December 9.

Jonah S. Miron, Far Rockaway, N. Y.; Fordham University, New York City, 1918; aged 24; superintendent of St. Joseph's Hospital, Far Rockaway; died in that institution, October 20, from lobar pneumonia.

John Busby Ury ● **Capt., M. C., U. S. Army,** Defiance, Ohio; Rush Medical College, 1903; aged 40; died at Fort Oglethorpe, Chickamauga Park, Ga., about December 8, from pneumonia following influenza.

William Hodnett Butler ● Fall River, Mass.; Bellevue Hospital Medical College, 1897; aged 51; a member of the visiting staff of the Fall River Hospital; died at his home, October 11, from influenza.

Henry Nicholas Barth ● Metamora, Ill.; Northwestern University Medical School, Chicago, 1909; aged 33; a specialist in internal medicine; died at his home, November 18, from septic endocarditis.

Harrison C. Hopper, Lawrence, Kan.; Jefferson Medical College, 1879; aged 63; at one time a member of the Kansas Medical Society; died at his home, November 29, from carcinoma of the prostate.

Charles Webster Gould, Jr. ● Atlanta, Ga.; Rush Medical College, 1901; aged 45; formerly a practitioner of Fairdale, Ill.; a specialist in clinical pathology; died at his home, December 1.

John Latham Seay ● Whitwell, Tenn.; Louisville (Ky.) Medical College, 1904; aged 36; died in an infirmary in Birmingham, Ala., November 18, from pneumonia following influenza.

James F. Fitzgibbon, Racine, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1895; aged 52; died at his home, December 4, from pneumonia following influenza.

Ira Clark Guptill, Northboro, Mass.; Dartmouth Medical School, Hanover, N. H., 1875; aged 74; town physician of Northboro; died at his home, about December 5.

James A. Carson, Maquoketa, Iowa; Hahnemann Medical College, Chicago, 1881; aged 74; a veteran of the Civil War; died in Los Angeles, Calif., December 3.

Albert Charles D'Vorak, Chicago; University of Illinois, Chicago, 1918; aged 32; an intern in Michael Reese Hospital, Chicago; died December 6, from pneumonia.

Charles Henry Shelton, La Jolla, Calif.; New York Homeopathic Medical College, 1880; aged 64; formerly of Montclair, N. J.; died at his home, December 11.

Sverre T. L. Hartman, Vancouver, B. C.; University of Christiania, Norway, 1906; aged 41; died at his home, November 20, from pneumonia following influenza.

James Elwin Snyder, Versailles, Ill.; Chicago College of Medicine and Surgery, 1912; aged 44; died in Cooperstown, Ill., September 17, from carcinoma of the stomach.

August Herman DeFries, Davenport, Iowa; University of Illinois, Chicago, 1896; aged 61; died at his home, November 30, from pneumonia following influenza.

Harvey Wellington Smith ● Carsonville, Mich.; University of Toronto, Ont., 1880; aged 63; died at his home, November 17, from pneumonia following influenza.

Thomas McEwen ● Hemlock, Mich.; Victoria University, Coburg, Ont.; 1886; aged 58; died at his home, about December 4, following a surgical operation.

Elisha Bennett Burnham, Essex, Mass.; Dartmouth Medical School, Hanover, N. H., 1897; aged 47; died at his home, October 10, from bronchopneumonia.

William Turner Parsons ● Palmer, Mass.; Johns Hopkins Medical School, Baltimore, 1907; aged 37; died at his home, November 30, from pneumonia.

William Ellerbe Pelham, Jr. ● Newberry, S. C.; Tulane University, New Orleans, 1905; aged 39; died at his home, October 6, from pneumonia.

Frederick C. Cox ● Newby, Ky.; University of Louisville, Ky., 1904; aged 38; died at his home, October 24, from pneumonia following influenza.

Guy Halifax Wallace, New York City; University of Toronto, Ont., 1909; aged 32; a specialist in pathology; died at his home, December 9.

Joseph Ward ● Cortland, Ohio; Western Reserve University, Cleveland, 1885; aged 59; died at his home, December 4, from nephritis.

Edward Barney Smith, Brightwood, Va.; University of Maryland, Baltimore, 1907; aged 33; died at his home, November 13.

Thomas Allen Smith, Houstonia, Mo.; Hospital College of Medicine, Louisville, Ky., 1881; aged 66; died, recently, at his home.

Eugene Martin, Chicago, University of Illinois, Chicago, 1889; aged 62; died at his home, November 23, from nephritis.

Frank E. Burns, New Orleans; Tulane University, New Orleans, 1891; aged 49; died at his home, November 25.

Correspondence

"THE BIPOLAR BACILLUS OF INFLUENZAL SEPTICEMIA"

To the Editor:—In THE JOURNAL, Nov. 16, 1918, p. 1700, an abstract from *Policlinico*, Rome, describes the cultivation by Ciauri of a bipolar micro-organism in conjunction with gram-positive rods from the blood and sputum of cases of severe influenza. We have recently isolated from a pleural effusion following influenza a bacterium similar in some respects to the bipolar organism described by this author. The following characteristics were noted: The organism was rod shaped, often oval, gram-negative, with distinct bipolar staining and a tendency to variation in morphology. No motility was observed. It grew on plain agar best at 37.5 C., though not heavily, and aerobic conditions were more favorable than anaerobic. Acid was not produced in glucose, lactose or saccharose agar. Gas was not produced in glucose bouillon. Gelatin was not liquefied and litmus milk was not coagulated or rendered acid. Indol production could not be satisfactorily determined because of lack of growth in the peptone medium. A rabbit injected with 1 c.c. of a twenty-four hour bouillon culture intravenously survived. Intraperitoneal injection of smaller doses into a guinea-pig and several mice was not followed by death. This organism apparently falls into the hemorrhagic septicemia group, differing from most of the members of this group by lack of virulence.

EDWARD STEINFIELD, M.D., Philadelphia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

LITERATURE ON POISONOUS GASES IN MODERN WARFARE

Kindly let me know if you have on hand any literature written on poisonous gases as used in modern warfare.

S. BETAGOLE, University, N. D.

ANSWER.—

Gallo, G.: Eighty-Two Cases of Gas Asphyxia in War, *Riforma med.*, Jan. 27, 1917.

Miller, J.: Blood Changes in Gas Poisoning, *Lancet*, London, May 26, 1917.

Piessinger, C.: Heart Accidents from Gassing, *Bull. de l'Acad. de méd.*, Sept. 25, 1917.

Tapie, J.: Galloping Phthisis After Inhalation of Asphyxiating Gases, *Progrès méd.*, Oct. 20, 1917.

Parisot, J., and Tixier, L.: Cardiovascular Disturbances with Gas Asphyxia, *Paris méd.*, Nov. 10, 1917.

Mandel, M., and Gibson, W. S.: Clinical Manifestations and Treatment of Gas Poisoning, THE JOURNAL, Dec. 8, 1917, p. 1970.

Pest, G. B.: Effects of Gassing as Seen at Casualty Clearing Station, *Canad. Med. Assn. Jour.*, January, 1918.

Treatment of Gas Asphyxia, Medical Mobilization and the War, THE JOURNAL, April 21, 1917, p. 1190.

Gases in Modern Warfare, editorial, THE JOURNAL, April 20, 1918, p. 1160.

Teuliers, M.: Eye Injuries in the Gassed, *Jour. de méd. de Bordeaux*, February, 1918; abstr., THE JOURNAL, April 27, 1918, p. 1266.

Weller, C. V.: Pathology of Gassing, *Bull. Internat. Assn of Med. Museums*, May, 1918.

The Pathology of "Mustard Gas," editorial, THE JOURNAL, June 22, 1918, p. 1947.

Pierry: Low Blood Pressure and Tachycardia in Gas Asphyxia, *Lyon méd.*, July, 1918.

Lasenby, J. M.: Treatment of Irritant Gas Poisoning, *Brit. Med. Jour.*, Sept. 28, 1918.

Warthin, A. S., and Weller, G. R.: Ocular Lesions Produced by Dichlorethylsulphide, *Jour. Lab. and Clin. Med.*, October, 1918.

Warthin, A. S.; Weller, C. V., and Others: Treatment of Mustard Gas Injuries, *Jour. Lab. and Clin. Med.*, October, 1918.

Derby, G. S.: Effect of Mustard Gas on the Eyes, *Am. Jour. Med. Sc.*, November, 1918.

War Gases and Chemical Warfare, editorial, THE JOURNAL, Nov. 23, 1918, p. 1742.

Norris, G. W.: Toxic Gases in Modern Warfare, with Special Reference to Diagnosis and Treatment, THE JOURNAL, Nov. 30, 1918, p. 1822.

Frescoln, L. D.: Mustard (Yellow Cross) Burns, THE JOURNAL, Dec. 7, 1918, p. 1911.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 14. Chairman, Dr. S. W. Welch, Montgomery.

ARIZONA: Phoenix, Jan. 7. Sec., Dr. Allen H. Williams, 219 Goodrich Bldg., Phoenix.

COLORADO: Denver, Jan. 7. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Jan. 14-16. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

HAWAII: Honolulu, Jan. 6. Sec., Dr. J. R. Judd, Honolulu.

KANSAS: Topeka, Feb. 11. Sec., Dr. H. A. Dykes, Lebanon.

MINNESOTA: Minneapolis, Jan. 7-10. Sec., Dr. Thomas McDavitt, 741 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, Jan. 28-30. Sec., Dr. G. H. Jones, State House, Jefferson City.

NEW MEXICO: Santa Fe, Jan. 13. Sec., Dr. W. E. Kaser, East Las Vegas.

NEW YORK: Jan. 28-31. Albany, Buffalo, New York City and Syracuse. Mr. Herbert J. Hamilton, Asst. Prof. Exams., New York Dept. of Education, Albany.

NORTH DAKOTA: Jan. 7. Sec., Dr. G. M. Williamson, 860 Belmont Ave., Grand Forks.

OKLAHOMA: Oklahoma City, Jan. 7-8. Sec., Dr. J. J. Williams, Weatherford.

OREGON: Portland, Jan. 7. Sec., Dr. H. S. Nichols, Corbett Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 7-9. Sec., Mr. Nathan C. Schaeffer, State Capitol, Harrisburg.

RHODE ISLAND: Providence, Jan. 2-3. Sec., Dr. B. U. Richards, State House, Providence.

SOUTH DAKOTA: Pierre, Jan. 14. Sec., Dr. P. B. Jenkins, Waubay.

UTAH: Salt Lake City, Jan. 6. Corres. Sec., Dr. G. F. Harding, 405 Templeton Bldg., Salt Lake City.

VERMONT: Burlington, Feb. 11. Sec., Dr. W. Scott Nay, Underhill.

WASHINGTON: Spokane, Jan. 7-9. Sec., Dr. C. N. Suttner, 415 Old Nat'l Bk. Bldg., Spokane.

WISCONSIN: Madison, Jan. 14. Sec., Dr. J. M. Dodd, 220 E. 2d St., Ashland.

Missouri October Examination

Dr. George H. Jones, secretary of the Missouri State Board of Health, reports the written examination held at Kansas City, Sept. 30-Oct. 2, 1918. The examination covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 24 candidates examined, 21 passed and 3 failed. Fifteen candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Chicago College of Medicine and Surgery	(1917)	80.2
Loyola University	(1916) 81.4; (1917)	86.1
Northwestern University	(1918)	86.6
University of Kansas	(1917) 88.5; (1918)	81.1, 83.7
Central Medical College of St. Joseph	(1899)	75.3
Marion-Sims-Beaumont Medical College	(1903)	75.7
National University of Arts and Sciences	(1918)	75.2
St. Louis College of Phys. and Surg. 76.8, 80.3, 80.9, 81.5.	(1913) 81.1; (1918)	75.6
John A. Creighton Medical College	(1918)	79.7
Meharry Medical College (1918) 80.2, 81.1, 84.1.		
Fort Worth School of Medicine	(1896)	75.1
FAILED		
St. Louis College of Phys. and Surg.	(1918)	70.1, 72.7
Meharry Medical College	(1917)	65.4

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
University of California	(1891)	Penna.
Bennett Medical College	(1914)	Illinois
Chicago College of Medicine and Surgery	(1915)	Illinois
Rush Medical College	(1882)	Iowa
State University of Iowa College of Medicine	(1910)	Iowa
Kansas City Hahnemann Medical College	(1910)	Kansas
University of Kansas	(1911) (1915)	Kansas
Tulane University	(1910)	Louisiana
Michigan College of Medicine and Surgery	(1891)	Michigan
University Medical College of K. C.	(1908)	Kansas
John A. Creighton Medical College	(1915)	Nebraska
Medical College of Ohio	(1889)	Kentucky
Jefferson Medical College	(1898)	Penna.
Meharry Medical College	(1916)	Tennessee

Connecticut Homeopathic November Examination

Dr. E. C. M. Hall, secretary of the Connecticut Homeopathic Medical Examining Board, reports the written examination held at New Haven, Nov. 12-13, 1918. The examination covered 7 subjects and included 70 questions. An average of 75 per cent. was required to pass. Two candidates were examined, both of whom passed. The following college was represented:

College	Year Grad.	Per Cent.
PASSED		
N. Y. Homeo. Med. Coll. and Flower Hosp.	(1916) 87; (1918)	89

Book Notices

WALTER JAMES DODD: A BIOGRAPHICAL SKETCH. By John Macy. Boards. Price, $1.50 net. Pp. 64, with illustrations. Boston: Houghton Mifflin Company, 1918.

Walter James Dodd came to America from England at 10 years of age, and after holding various odd jobs became assistant janitor in the Boylston Chemical Laboratory at Harvard. His chief interest was not in "janitoring," for he followed carefully the work in chemistry with the students regularly enrolled, and was easily able to pass the examinations in the various courses. Later he was appointed assistant apothecary at the Massachusetts General Hospital, continuing his studies in chemistry, and finally passing the state examination and becoming a registered pharmacist. In addition to dispensing prescriptions, the apothecary was official photographer of the hospital, so that Dodd became an expert photographer.

In 1895 were published the first obscure reports of the discovery of the roentgen ray. Mr. Dodd became interested in this work, and was coadjutor in the early work with Dr. Walter B. Cannon on the subject. When Dodd began to work with the roentgen ray, like many other early workers he suffered numerous burns of the hands, and for the next twenty years his hands continued to become more and more crippled and mutilated. It was not learned for several years that the roentgen ray might produce malignant reactions in the tissues. In 1900, Mr. Dodd entered the Harvard Medical School, studying one year, and later continuing his studies at the University of Vermont, where he was graduated in 1908. After his graduation, Dodd was appointed roentgenologist of the Massachusetts General Hospital. In June, 1915, he went to France as roentgenologist with the first Harvard medical unit. Before leaving, it was necessary for him to undergo an operation because of his earlier work with the roentgen ray. He returned to Boston in October, 1915, and seemed to be improving. He lost weight, however, developed enlargement of the glands, and died, Dec. 18, 1916. The laboratory of roentgenology in the Massachusetts General Hospital, it is indicated, will be called the Walter James Dodd Memorial.

The experience of Dr. Dodd is typical of that of most of the early workers in this new field. It is evidence, furthermore, of the way in which men with the true scientific spirit have been wont to surmount great obstacles in their search for scientific advancement, many of them being in every sense of the word martyrs to their professions. The biography of Dr. Dodd is stimulating.

THE MEDICAL RECORD VISITING LIST OR PHYSICIAN'S DIARY FOR 1919. Leather. Sixty Patients per Week. Price, $1.75. New York: William Wood & Co., 1918.

THE PHYSICIAN'S VISITING LIST FOR 1919. Sixty-Eighth Year of Its Publication. Leather. Price, $1.25. For 25 patients per week. Philadelphia: P. Blakiston's Son & Co., 1919.

These visiting lists conform to the usual style. They are very handy for the keeping of brief records of visits made, engagements for the future and ordinary memoranda. As these books are well known to the profession, it is hardly necessary to do more than state that each is up to its customary standard.

DENTAL AND ORAL RADIOGRAPHY. A Textbook for Students and Practitioners of Dentistry. By James David McCoy, D.D.S., Professor of Orthodontia and Radiography, College of Dentistry, University of Southern California. Second edition. Cloth. Price $2.50. St. Louis: C. V. Mosby Company, 1918.

This book deals with the history of roentgenology, including the nature of the roentgen ray and its discovery by Roentgen. The Crookes tube, induction coil, and other apparatus used in producing roentgenograms are described and illustrated. The technic of exposures to secure the best results, with valuable hints on interpretation of dental and oral plates and films, is given. This part of the book is profusely illustrated. The book evidently is intended mainly for the dentist who aspires to become his own roentgenologist, and with this thought in mind the author directs his teaching to

the beginner, rather than to the experienced roentgenologist. With this view of the book, it may be recommended without hesitation.

Medicolegal

Death from Pricking Pimple an Accident

(Lewis v. Iowa State Traveling Men's Association (U. S.), 248 Fed. R. 602)

The United States District Court, in Iowa, holds that where a man insured by the defendant association died from intentionally pricking a small pimple on his upper lip with a gold scarf pin that he took from his necktie, his lip at the place becoming immediately infected with staphylococcic infection from the scarf pin, which infection spread and caused his death in a few days, it must be considered that he died as the result of bodily injuries received "through external, violent and accidental means," within the terms of his insurance policy. The court says that it may be taken as settled by the great weight of authorities that, under language of this kind in a policy, it is not sufficient that the result shall be accidental, but the "means" must be accidental, as well as the result, which the court thinks was true in this case. If the injury resulted from the pin alone, and there was no proof that the pin was infected, the accidental result would not be covered by the policy; but the insured clearly used something that he did not intend to use. He used not only the pin, but an infected pin—a poisoned pin. This infection was such that it could not, in the nature of things, be discovered by him without perhaps a microscopic investigation. In the court's opinion, the means were clearly accidental. Nor was the defendant exempted from liability under its general convenant to pay, by a provision in its by-laws that the "association shall not be liable . . . for accidental death . . . resulting wholly or partially, directly or indirectly, from . . . local or general infection" (except when such infection or inflammation results from a visible or open wound caused by external, violent and accidental means). The fact that the cocci entered the wound in its making, as agreed by the parties, ought not to make any difference in the construction of this provision of the contract.

Illegal Prescribing of Narcotics

(Commonwealth v. Noble (Mass.), 119 N. E. R. 510)

The Supreme Judicial Court of Massachusetts, which holds that a verdict of guilty returned against the defendant on all the counts must stand, says that the defendant was charged in ninety-six counts in the indictment with unlawfully prescribing narcotic drugs, including morphin, cocain and heroin, when not obviously needed for therapeutic purposes, to persons known to the defendant to be habitual users of such drugs, in violation of Section 2 of Chapter 187 of the Statutes of 1915. The commonwealth offered evidence that any method of treating a drug addict not under the complete control and supervision of the physician, by prescribing narcotic drugs to be administered by the patient, had no justification in the practice of medicine, and that under such a course of treatment the patients were free to go from one physician's office to another and thus secure a supply of such drugs as they desired. There was also evidence that the defendant prescribed morphin and cocain combined, that cocain was prescribed for habitual users of that drug, and that such methods of treatment were improper and without justification; that the doses prescribed were excessive in amount and contrary to the legitimate practice of medicine; that the system followed by the defendant was to prescribe 50 or 60 grains of morphin sulphate to each patient as the initial prescription; and every few days thereafter a similar prescription, calling for a single grain less than the preceding prescription, would be issued to the patient; and that in many prescriptions a quantity of cocain would also be prescribed and reduced in the same manner. Testimony of the defendant, in support of which he offered expert testimony, that the treatment he gave was obviously necessary for therapeutic purposes, was met by the testimony of experts who said that in their opinion such a prolonged reduction treatment was not necessary; that even a sudden withdrawal of the drug was not dangerous, and that they had never known of a case resulting fatally therefrom.

The defendant contended that, being the attending physician in the cases referred to in the indictment, he was the only person who could then determine the obvious necessity for the therapeutic treatment after examination and history of the patient; that his judgment in the matter was conclusive and could not be reviewed or inquired into in a court of law in a trial of an indictment of this kind; and he requested the court so to rule. The presiding judge refused so to rule, and the only question presented for the determination of the supreme judicial court was whether the defendant was entitled to the ruling above referred to, which this court holds that he was not; that the presiding judge rightly refused his request.

The statute provides, in Section 3, for the protection of reputable physicians who act honestly and in good faith. And while the question whether the drug is or is not obviously needed for therapeutic purposes in a given case is a question for the attending physician, and he is not to be held liable for a violation of the statute if he acts in good faith, it does not follow that his judgment in the matter is conclusive and cannot be reviewed or inquired into in a prosecution for an alleged violation of the statute. In the case at bar, on conflicting evidence and the reasonable inferences to be drawn therefrom, it was a question of fact whether the defendant believed the drugs prescribed by him were obviously needed for the treatment of the persons for whom he so prescribed, or whether he was engaged in the business of issuing prescriptions to habitual drug users at $2 each, solely for his pecuniary gain and without reference to the question whether such drugs were obviously needed or not by those who obtained them. The question whether the defendant exercised his honest professional judgment and acted in good faith, or whether he intentionally violated the statute, was a question of fact for the jury, to be determined by them as men of practical sense and sound judgment.

Infirmary Not Liable for Negligence

(Cook v. John N. Norton Memorial Infirmary (Ky.), 202 S. W. R. 874)

The Court of Appeals of Kentucky affirms a judgment in favor of the defendant, which was sued for damages because, through the alleged negligence of the defendant, its nurses, agents and servants, a patient fell from a window and sustained injuries resulting in her death. The court says that an examination of the authorities has convinced it that a purely charitable institution, such as the defendant's hospital was described in the pleadings to be, is not amenable to its patients, although paid ones, for any damages they may have sustained growing out of alleged negligence, although such negligence might consist in the violation by the hospital of some duty imposed by either an express or an implied contract. Some of the cases relieve the defendant of liability on the ground that the doctrine of respondeat superior, or let the master or superior answer, does not apply to purely charitable institutions; but this court has not dealt with that feature of the case, since the conclusion it has reached renders it unnecessary. Neither has this court overlooked the fact that some of the cases relieving the institution of liability impose on it the duty of exercising care in the selection of its servants, which, if it should negligently fail to do, it would be liable. But this court has found it unnecessary to consider that proposition, because there was no allegation presenting that issue. Nor does this court pass on the question of the liability of such institutions for conduct purely tortious, affecting members of the public who are strangers to them. This court would also not be understood as holding that such institutions would not be liable on their contracts made for the purpose of protecting, looking after, and taking care of their physical property, or in supplying themselves with those necessities required for their continued maintenance, since on such contracts they are liable, as are other individuals and corporations.

Society Proceedings

COMING MEETINGS

Society of American Bacteriologists, Boston, Dec. 30-Jan. 1.

AMERICAN ASSOCIATION FOR THE STUDY AND PREVENTION OF INFANT MORTALITY

Ninth Annual Meeting, held at Chicago, Dec. 5-7, 1918

(*Concluded from Page 2107*)

The Springs of A Nation's Life

DR. EDWARD P. DAVIS, Philadelphia: To secure a healthy infant population, it is absolutely essential that the conditions of life be such that early marriage can be encouraged. A living wage, sanitary and comfortable means of dwelling, civic sanitation, including a pure and reasonable food supply, and all those agencies which make for physical, mental and moral hygiene are of the utmost importance. No greater curse on the nation in the care of its infant population could be devised than the presence of a large standing army. In continental Europe, marriage is forbidden to men of military age unless they possess a certain stipend. The result has been indiscriminate immorality, and in order to save its population the state is obliged to care for the mothers in hospitals and to rear the children in foundling asylums. The crying need in the prevention of infant mortality is better obstetrics. In order to make improvement in obstetrics possible, the economic and other factors referred to must be present; but without better obstetrics, these factors will be of little value. The encouragement of early marriage in healthy individuals is a step of primary importance; marriage among those physically unfit is to be discouraged, and, if possible, forbidden. It may not yet be possible to require physical examination of men and women before marriage, but the need for such examination is evident.

Education of the laity, nurses and physicians in matters concerning the increase and care of the population is of paramount importance. Why should not a brief, clear statement of symptoms of dangerous conditions arising in pregnant women be posted in rooms used only by women? Why should not the attention of expectant mothers be called to the dangers of miscarriage and convulsions and hemorrhage occurring during pregnancy? Much has been done to educate medical students and physicians for better obstetrics; but economic conditions and lack of hospital facilities have been such that physicians cannot afford to do, in a large private practice, the careful work accomplished in good hospitals. The modern obstetric trained nurse has saved the lives of thousands of infants.

DISCUSSION

DR. JOSEPH B. DELEE, Chicago: No matter how much improvement we make in a housing community, social service, etc., unless we are able to teach the public the necessity for better obstetrics and to get most of the people thoroughly acquainted with the needs of the child-bearing woman, we shall fail to produce any remarkable reduction in infant mortality. The prevention of fetal deaths during pregnancy and labor may be summed up in the words "better obstetrics." Grace Meigs' investigation of the U. S. census report shows that child-bearing is as dangerous now as it ever was within our memory, and that the deaths from child-bearing are second in number only to those from tuberculosis.

Conservation of Life of the Unborn and Newly Born Child

DR. RUDOLPH W. HOLMES, Chicago: It would be desirable that every college for young men and women should have compulsory instruction on the influences of heredity, and give instruction on the general principles of the rights of the unborn. The legislative control of marriages of those afflicted with inheritable disease, requiring a medical certificate from one or both parties, is theoretically correct; in practice it is of questionable value. At present, control of mental defectives is abhorrent to the uneducated mind. Conferences should be held covering the general problem of eugenics; suggestive courses should be given to prospective mothers and to young fathers, that they may meet their responsibilities with intelligence and knowledge. I would have a properly equipped maternity hospital with divisions covering the various needs of the prospective mother and her child before and after its advent into the world. I doubt the expediency of having independent centers.

An ideal center would comprise these divisions: (*a*) There should be a social investigator who should visit the home and determine the true economic need of the family. (*b*) Opportunity and encouragement should be given to all prospective mothers to avail themselves of the antenatal clinics. (*c*) At the time of labor the record of the patient should be transferred, or at least made available, to the maternity department. (*d*) Every woman, before leaving the maternity, should receive positive instructions for her return for a postpartum examination—for recommendations for her own welfare. (*e*) There should be an infant welfare department, including an adequate department for the preparation of foods for infants. (*f*) Systematic courses of lectures should be instituted covering all the phases entering into the questions of personal hygiene, marriage relations, matters cognate to the bearing of children, the care of women in pregnancy, and the care of children thereafter.

The Minnesota Plan for the Establishment of Infant Welfare Clinics in Small Towns

DR. E. J. HUENEKENS, Minneapolis: The Division of Child Conservation of the Minnesota State Board of Health has been in existence for six months. In June, 1918, at a meeting attended by all the pediatricians of the state, it was recommended that this division be established and that infant welfare clinics be begun in the smaller communities of the state. Well organized clinics had been in existence for a number of years in Minneapolis, St. Paul and Duluth, so that these places did not have to be considered. It was deemed advisable to establish clinics only where there was a local demand and some kind of local organization that could make the preliminary preparations. This is our method of procedure: When a request for a clinic is received, the head nurse of the division visits the community, explains the object of the work, advises what is necessary in the way of equipment, meeting place, volunteer assistants, etc., and a day is set for the clinic. The advertising of the clinic is left to the local people, and consists of notices in the newspapers, posters, announcements in the churches and schools, and occasionally a house-to-house canvass by block workers. On the day before the clinic, the head nurse again visits the community to make sure that all preparations have been made. In a letter to the local physicians, inviting them to attend the clinic, the director has carefully explained that healthy babies, as well as sick ones, up to the age of 5 years, will be received, though children over that age will not be excluded; advice will be given as to proper diet, especially as to the value of breast feeding, and directions as to clothing and general hygiene; if any pathologic conditions requiring medical or surgical care are found, the patient will be referred back to the family physician for treatment.

Until the next legislature meets, the plans are on a temporary basis, the director being paid per diem, and two full time nurses employed. The budget to be placed before the next legislature, which meets in February, calls for a director on a half time salary and an assistant director on full time salary, three full time nurses and a stenographer and clerk, a total of $15,000 a year. One of our difficulties is to obtain nurses with public health training for these communities. The University of Minnesota and the Minnesota Public Health Association are now coöperating and have established a special four months' course in public health nursing for registered and senior nurses. Until we have sufficient graduates from this course, we intend to have one of our nurses spend several weeks initiating the new community nurse in her duties. The ideal solution for the future would be the establishment in every county, or even smaller units, of full time health officers, trained in infant welfare work, as a part of their public duties.

Rural Work for Infant Welfare in Canada and Other Countries

DR. MAURICE MACDONALD SEYMOUR, Regina, Sask.: In the provinces of Canada the effort to reduce infant death rates in the rural districts has consisted of: 1. The establishment at rural points of municipal hospitals subsidized by the government. 2. The appointment of medical men at a salary by municipal councils to serve the rural communities. 3. The conducting of child welfare clinics and exhibits, lectures, etc., at rural centers, more particularly in connection with fairs, when most publicity can be secured. 4. Wide distribution of literature dealing with the care of the baby. 5. The adoption of a system of rural public health nursing, which will be greatly increased in the near future. 6. A government maternity grant to expectant needy mothers in rural districts. 7. Education of the public and wide distribution of literature on the subject of infectious diseases, particularly with regard to the venereal diseases.

In order to improve the situation, the adoption of these measures is to be strongly recommended: 1. A system of dominion-wide training, registration and thorough supervision of midwives. 2. A general system of rural public health nursing, with particular reference to child welfare and prenatal care. 3. The providing of free treatment for all syphilitics by means of cooperation between government and municipal authorities. 4. A more general provision for government aid for maternity cases.

AMERICAN PUBLIC HEALTH ASSOCIATION

Forty-Sixth Annual Meeting, held in Chicago, Dec. 9-11, 1918

(*Continued from page 2100*)

Organization of Forces Against Influenza

DR. M. NICOLL, JR., New York: The general mortality caused by this unknown disease has never been equaled in the country as a whole. This unknown disease kills by secondary pneumonia, usually of a peculiar bronchopneumonic type and due to a variety of organisms, including probably the so-called influenza bacillus. The uncomplicated disease causes a marked leukopenia, together with a profound toxemia, with a tendency toward the production of hemorrhage. The age of special susceptibility is that of young adult life. Among pregnant women it is especially fatal. Those who go to bed and remain there, even with ordinary nursing care, until at least a week after the establishment of full convalescence, will in the large majority of cases recover. Strict quarantine of groups of people has been successful in keeping out the disease.

DR. WILLIAM C. WOODWARD, Boston: The following measures have been adopted for the prevention and spread of influenza: reporting of the disease, the use of masks, the use of vaccines, hospitalization, regulation of the use of common drinking cups in restaurants, lunchrooms, etc.; restriction of crowding; education.

Reporting the disease gives a clue to its prevalence in times of epidemic and serves as a guide in taking measures for the prevention of the disease.

DR. W. O. SHERMAN, Pittsburgh: I believe that there is sufficient evidence at hand to warrant us in believing that from a prophylactic standpoint there is some virtue in the use of vaccines in reducing the severity of influenza.

DR. JOHN DILL ROBERTSON, Chicago: Many places of amusement were closed during the epidemic of influenza to give the people of Chicago more sleep. I believe sleep is the greatest regenerating agent known to mankind. The better class of theaters were not closed, because in them ventilation was good, and such places were used as centers of education for instructing the public regarding the epidemic.

DR. H. O. JONES, Chicago: The consensus of opinion is in favor of keeping the public schools open during an epidemic of influenza for the following reasons: A better knowledge of existing conditions can be had when the schools are made a source of information as to sickness among the children and their families. It would be possible to supervise the children and keep many of them under better conditions during the school hours than if they were allowed to stay at home and run in streets and alleys, or play on premises where persons sick with the disease lived. We have an organized staff of physicians and nurses for medical inspection of schools.

DR. ROYAL S. COPELAND, New York: At the peak of the epidemic the death rate in Philadelphia was 140, Baltimore 120, Boston 82, Buffalo 80, Newark 55, and New York 47. For the combined weeks of the epidemic Philadelphia had 55 per 1,000, and New York had 25. So, after all, bad as it was, with 21,000 people dying in our city, it might have been worse.

One Sunday, as I sat in my office, one of the wealthy men of the city and owner of a large department store called me on the phone. He said, "Is this the health commissioner?" I replied, "Yes." He said, "If you do not close the schools and theaters tomorrow you will be indicted." I asked him why I should close the schools and theaters, and he replied, "You must think I am a fool"; and I said, "I am sure you think I am one if you think I should close the schools without good and sufficient reasons." I told him that if we closed the schools it would be equally necessary to close the department stores with their insanitary subbasements, their bargain counters, their overloaded elevators, etc., and the conversation ended. You will be interested to know that after I gave my reasons to this gentleman who differed with me, on last Sunday I dined with him, and he assured me that I was the greatest health officer the world has ever known. As a matter of fact, we did not close the schools and theaters. The very night that this department store man called me up Mr. Hearst called me and said, "This man, who is a large advertiser, wants me to make an attack on you. Will you tell me why you did not close the schools and theaters?" This is what I told Mr. Hearst: The most important part of disease control is the public school system. We have a million schoolchildren in New York, and 700,000 of them come from tenement homes, the poorest homes on earth. It will be better for these children to be permitted to go to school where the schoolhouses are sanitary and are under the strict regulation of the everyday system of disease control than to permit them to linger in the school yards or in the basements, etc. It was better for these children to be attending school than to be at home under unpleasant and unhygienic surroundings. If any child showed symptoms or signs which indicated the possibility of influenza, that child was put in a room by himself until examined by a nurse or by a doctor to discover whether he or she had influenza, and if found to have the disease he was sent home under the care of the board of health, and a board of health doctor or nurse would find out whether the family had a family physician, and if so, whether there was a possibility of isolating and protecting other members of the family. If not, the child was to be placed in a hospital where it could be given care. It is a great deal better to care for children in this way than to turn them loose on the streets to play where they will.

As regards theaters, I never had any doubt about them except the moving picture show. We put a padlock on the unventilated show and used the first-class theaters as places for public health education. Each night some one appeared before the curtain and delivered a short talk to the people, telling them there was no necessity to be frightened, but that coughing and sneezing were the ways by which the disease was transmitted to others, and that they must not cough and sneeze in these places. If they did, they were to be ushered out of the theaters. We made use of these talks to great advantage in promulgating public health education.

A concrete problem in the city of New York is that of the subway. We had conferences with all of the big merchants of New York City and decided to "stagger" hours of travel; that is, we opened and closed places of business according to a certain system, varying the hours of opening in the morning and closing in the evening in different establishments, and this materially reduced the peak of travel in the subway and undoubtedly lessened very materially the number of cases of the disease.

The Rôle of the Hand in the Distribution of Influenza

Col. Charles Lynch and Lieut.-Col. James G. Cumming, Washington, D. C.: The causal organisms of sputum-borne diseases, resident in the mouth and nose, leave the body of the infected through these orifices and enter the noninfected through similar channels. The vehicles for the transfer of germ-laden saliva from and to the mouth and nose are the hands and eating utensils. Crowd diseases have their origin, to a large extent, in the constant accumulative contamination of intermediate objects, which are the distributing centers of the infection for many hands and many mouths. Food may be infected by contaminated hands and then spread the sputum-borne infections, as well as the intestinal-borne infections. In all infectious diseases there are major and minor routes of transmission from the sick to the well. In military life the mess-kit wash water has proved to be the major route, and intermediate object conveyors by hand touch the minor route. Droplet infection is subsidiary to both, because explosive outbreaks do not result from droplet infection, and as far as mouth pathogens are concerned, 18 inches is about the maximum distance that plates on a level with the mouth can be infected by droplets expelled through the act of coughing. Moreover, since the weight of these droplets (even the finest spray) is such that they fall rapidly, the probability of infection by the flight of organisms is remote. It is true that the chain of both direct and indirect transmission may be broken in several ways; one of these is by wearing the mask. This acts in two ways: It prevents droplets from being expelled from the mouth and it also prevents the hands from being put into the mouth. On this basis the value of the face mask may be emphasized. Its value, however, lies in the fact that it serves as a barrier between the hand and the mouth rather than between the mouth and the outside air. The relative importance of this face mask to clean hands is just about the same as in the case of the surgeon who would wear a mask but neglect to wash his hands. In order for the mask to be effective, the wearer must wash his hands before it is removed.

Discussion

Dr. W. H. Kellogg, San Francisco: Gauze masks were given a thorough trial by an ordinance enforcing their use in San Francisco. Beginning with the use of these masks there was a rapid decline in the number of cases of influenza. The experience of Los Angeles has proved that the wearing of masks is a great preventive of the disease. In that city, where they did not use masks, they had a much larger number of cases than in San Francisco. A properly made mask affords efficient protection against droplet-borne infections.

Dr. Woods Hutchinson, New York: The San Francisco people were asked to wear masks in the interest of public health and for public safety. They cooperated with the public health authorities with the result that there was a great reduction in the number of cases of influenza.

Dr. A. J. McLaughlin, Assistant Surgeon-General, U. S. P. H. S., Washington, D. C.: I feel that the question of organization by the federal health forces in this country to meet this great national crisis and to face the situation presented has some extraordinary features. In the first place, if we search the history of this country we shall not find a parallel in the appalling loss of life either in its morbidity or mortality in any epidemic of any kind that has visited the United States. An epidemic of yellow fever with the loss of 1,000 lives spread over considerable territory would throw the whole country into a panic. A dozen cases of plague in a seaport town would cause the same kind of excitement; but it is remarkable to see the placidity with which the people generally have taken the almost sudden loss of 300,000 lives.

In facing the problem of public health, the first consideration is the distribution of the disease, and in considering an epidemic it is very essential to have a trained personnel to assist us in the prevention of the spread of the disease. In this epidemic a remarkable characteristic was that the great majority of availables, medical and nursing personnel, were already in the Army or Navy, so that the available personnel from which to draw was limited. Our next difficulty was the lack of accurate knowledge of the cause and transmission of this disease, and we may as well admit it. There is also a lack of biologic agents with which to prevent the disease, and until we have exact knowledge of the etiology and transmission of the disease we shall not be able by laboratory methods to develop those biologic agencies for prophylaxis, diagnosis and treatment of the disease. We have not acquired sufficient knowledge to know the cause of the disease and then develop in our laboratories some biologic products or agencies that will tell us which man is immune and which is not immune; nor have we an agency that will make people immune or an agent that will cure the disease after a man has become infected. These things are possible only when we get an accurate knowledge of the cause and transmission of the disease.

Our lack of knowledge of the etiology and transmission of the disease makes quarantine measures peculiarly futile. Maritime quarantine is the most exact of quarantine procedures with diseases such as Asiatic cholera. Maritime quarantine is not, as was called in the old days, a sieve but a dam to the entrance of infection. Quarantine against influenza, of which we do not know the cause, makes it possible for carriers to pass any quarantine. Quarantine of the ill is the obvious thing to do. By making the ill individual safe we are quarantining the least active and dangerous of the carriers of the disease. For one ill individual there are hundreds of others not quarantined. We are wearing masks as a protection to individuals. They are worthy of trial.

Many of the measures that have been suggested are not practicable. Restrictive measures, which have been criticised by some, although pretty generally employed by three fourths of the health officers to restrict gatherings of people, are based on sound general principles, and in the absence of any definite knowledge, such as we have of measures against cholera or yellow fever or plague, I would ask you to act on general principles in considering this as a contagious, communicable disease, and educate the people in personal hygiene, to prevent gatherings of people in close contact where greater spread of the infection will occur. We are forced to this by our lack of accurate knowledge. During this epidemic there were sections of the country that were absolutely stripped of physicians, especially in agricultural states, like Nebraska and North and South Dakota, where the small medical population had been taken into the Army. In those states it was necessary to bring in physicians from the outside; but we tried to avoid robbing Peter to pay Paul by organizing federal forces on state lines, so that in every state there was a representative of the United States Public Health Service, either a state health officer acting in that capacity or an officer of the service serving with him in the state capital, to handle relief which the federal government was able to give. With the state health officer and public health officer we had a representative of the American Red Cross appointed for each state. It was necessary to have this kind of organization in order to utilize the limited personnel to the best advantage, because from a central point like Washington it was quite impossible to estimate the relative urgency of calls two or three thousand miles away, whereas the man on the spot knew and could investigate the urgency of these calls and distribute his personnel to the best advantage.

The primary necessity of public health campaigns of this kind is to get accurate knowledge of the prevalence of this disease. Influenza should be a reportable disease, and in epidemic times it is not so essential to depend entirely on physicians. If you establish headquarters or branch headquarters in number according to the population of cities, the calls will come in; and if you have your medical nursing and other relief forces available at headquarters, you will be kept very busy in some places and do a good deal toward preventing the spread of the disease. It is good policy to institute house-to-house inspection and make a canvass for the sick. In the city of Detroit they used 200 schoolhouses when the schools were closed and used the schoolteachers for making house-to-house visits, and in three days these schoolteachers made 2,000 visits in getting information, and reporting to the physicians, which is a very slender reed to

lean on when the physicians are so busy and are not getting time to sleep. By this organization of the public health service, while it was largely limited to the extension of sick relief and nursing relief, we were able to do the best that could be done under the circumstances, and at that time the work went along quite smoothly by utilizing the state health officers in cities where we had no representative except the appointment of a field director under the Public Health Service.

DR. LOUIS I. HARRIS, New York: The reorganization of the various health forces of the country for future emergencies and for protecting and caring for recrudescent cases of influenza is very essential. There should be adequate appropriations of money by federal, city and state organizations, so that the work of prevention and treatment can be carried out on a scale commensurate with the importance of the problem.

The Work of the Illinois Influenza Commission

DR. C. ST. CLAIR DRAKE, Springfield, Ill.: From the onset of the epidemic, up to and including November 30, reasonably accurate reports from 1,348 Illinois health jurisdictions, within which is embraced 60 per cent. of the total population of the state, show 193,885 reported cases of pneumonia and influenza, 53,000 of which were in Chicago. In the same areas the reported deaths numbered 13,466, of which 9,129 occurred in Chicago.

It was found that no preventive vaccine had been used in twenty-one counties, and that it had been employed only to moderate extent in seventy-two counties. Only four counties in the state claimed its general employment. In addition to the vaccine furnished by the Illinois Influenza Commission and the Chicago Health Department, ten others were used.

As to whether or not these vaccines had served to prevent the spread of infection, nineteen counties offered no definite opinion, twenty-nine answered in the affirmative, twenty-seven were of divided opinion, and sixteen regarded the vaccines as of no preventive value.

Regardless of definite opinions as to the general value of vaccines, based on the experiences of these counties, the following figures were gleaned from these very interesting but highly unreliable questionnaires: counties in which there were no cases after vaccination, 23; counties claiming partial protection, 7; counties in which the severity of the disease was decreased by vaccination, 21; counties claiming prevention of pneumonia but not of influenza by vaccination, 1; counties reporting influenza after vaccination, 24; counties claiming pneumonia after vaccination, 4; counties claiming deaths after vaccination, 4; counties claiming absolutely no preventive value, 4; counties claiming disease increased by vaccination, 2.

Influenza at Great Lakes Naval Training Station

DR. OWEN J. MINK, Great Lakes Naval Training Station, Ill.: When influenza arrived at the Great Lakes Naval Training Station, the incidence increased with explosive violence for about five days. For about four or five days it reached the peak, and for about five or six days more it began to decline, and in two weeks the epidemic began and ended. I have plotted the curves of three of the largest Army camps and they have followed exactly the same curve. These curves indicate that in the average fatal case of influenza the patient lives about seven days before the end. It was very evident that this condition of affairs was not going to occur in civil life. The epidemic explodes in the big military camps, but it does not pursue this course in civil life. The rest of the curve is more gradual; the peak is held slightly longer, and the decline is much more gradual. A cure that covers two weeks in a military camp covers probably two months in civil life. From our figures you can refute almost any theory with regard to influenza that any one wants to advocate. It has been said, for instance, that influenza depends on the number of men in the unit in which the men live. Our camp is composed of units of three in a tent or seventy-five in a barracks, and between these two extremes we have units of twelve who are in contact with no one else outside, that is, men in detention. We have units of twenty-four, sixty, seventy-five, and some units of 150. Taking the several regiments, the largest incidence rate for the epidemic falls roughly between 200 and 300 of 1,000-man regiment, and before the epidemic was over, between 200 and 300 would contract the disease. One tent camp had an incidence of 300 per thousand; one camp composed of seventy-five men (a barracks) had an incidence of a little over 200.

I have no criticism of the mask, as Dr. Weaver intended it probably should be used. My figures are on the mask as it is used. The question came up as to the use of masks among our hospital corps who attended the sick. The medical officer of the regiment handles his own affairs, so that if he was an advocate of the mask he would have the hospital corps men use it. If he did not believe in the mask he did not have the hospital corps men use it. I asked him to keep track of those who used the mask and of those who did not and then to tell me what number of the hospital corps men developed influenza and what number did not. Of the men who used the mask, 8 per cent. developed influenza. Of those who did not use the mask, 7.75 per cent. developed influenza. I should not want to put the blame of the extra 0.25 per cent. on the mask, but the point I wish to bring out is that the mask seemed to have very little influence on the incidence of the disease. Another point of importance in connection with the mask is that long before the influenza epidemic began at the Great Lakes, it became the habit for dentists while operating to put on gauze masks, presumably for the protection of the patient, so that before and during the epidemic our dental officers wore masks, the ordinary influenza mask, and as near as we could determine, and these men had no particular association with the disease, certainly not as much as the hospital corps men, these dental officers developed influenza to the extent of 30 per cent. It is unfortunate that I cannot give you something constructive about the mask, but I believe it is better for you to know these things than not to know them.

Appointment of Committees

Four committees were appointed and presented tentative reports. One committee considered administrative measures; the second administrative measures for relief during the influenza epidemic; the third considered the use of biologic products or vaccines, and the fourth considered the history and statistics of the epidemic.

After a thorough discussion of the papers and reports submitted during the meeting, the following committee was appointed by the association and instructed to prepare a final report for publication as soon as possible as a guide for health officers and physicians generally: Dr. William A. Evans, Chicago, chairman; Dr. D. B. Armstrong, Framingham, Mass.; Dr. W. C. Woodward, Boston; Dr. William H. Davis, Washington, D. C., and Dr. Edward W. Kopf, New York.

Report of the Committee on Administration for Relief During the Influenza Epidemic

DR. WILLIAM C. WOODWARD, Boston: Your committee was charged with the formulation of certain principles for the guidance of health officers in communities for administrative measures and for the relief of epidemic conditions with special reference to influenza. Under general rules the committee suggests compulsory reporting of cases so far as it enables the relief measures to be directed to particular cases that may be reported, and in mentioning compulsory reporting we refer to the matter of isolation and placarding, calling attention to the fact that so far as isolation is compulsory it may lead to a diminished efficiency in reporting, so that while the committee recommends isolation by cooperation and education, it recommends that it be carried to a point where it does not diminish the willingness of the physician to report, and the same principle holds true with respect to placarding. Under preliminary measures the committee recommends the distribution of resources, including physicians, nurses, social workers, nurses' aids, clerks, domestics, laundresses, automobiles, and volunteers of all kinds. The local authorities should keep in touch with state and national agencies.

Report of the Committee on Bacteriology and Vaccines

DR. WILLIAM H. PARK, New York: Your committee reports that the epidemic disease known as influenza is believed to

be due to an undetermined organism which causes an infection that lowers the resistance of the body as a whole and of the respiratory organs in particular. This allows the invasion of other pathogenic organisms. The most important complicating infections are due to influenza bacilli, different strains of pneumococci, different strains of streptococci, etc. In each case one or several micro-organims may be present. In different portions of the country a dominating variety of organism has been found to differ.

Assuming that the cause of the epidemic is an unknown virus, it does not seem possible at present to prevent the primary disease by vaccination with known organisms. Against the secondary infections there would seem to be theoretical basis for the use of vaccines prepared from organisms responsible for the complications that may develop in various localities at various times.

DISCUSSION

Dr. James W. Inches, Detroit: The wearing of masks by the laity on the streets and in public places is of doubtful value. I regard the wearing of masks on the streets as a pure fake. Detroit was closed up for sixteen days during the epidemic. When the theaters and other places were closed in Detroit it deprived the board of health of the opportunity of affording the people education in regard to the epidemic. When everything was wide open the number of cases of influenza was less.

Dr. James A. Hayne, Columbia, S. C.: On receiving a telegram from Surgeon-General Blue regarding the pandemic of influenza, the state health officers of Virginia, North Carolina, South Carolina and Georgia held a conference and issued simultaneously an order for closing, so that every single school, church, theater, moving picture show, etc., was closed, and the closing of these places materially lessened the number of cases of influenza and the death rate. When people assemble in large crowds there is certainly a greater conveyance of droplet infection than if they do not. Eighty per cent. of the population of America is rural, and it is no easy proposition to formulate rules and regulations for the different rural communities. I heartily approve of closing in times of epidemic.

Dr. Roy K. Flanagan, Richmond, Va.: In Richmond, we closed the schools, but what was accomplished by it, I do not know. The results in Richmond compare favorably with other cities in regard to death rate. The death rate was lower in Richmond than in most cities on the Atlantic Seaboard. It was 3.8 per thousand in August and 4.2 per thousand of deaths in the months of September, October and November. There is an epidemic prevailing at present, but the second exacerbation is milder.

Dr. Charles V. Craster, Newark, N. J.: The association should be slow in condeming the use of the gauze mask, because its value has been demonstrated in many instances in preventing bacteria from entering the upper respiratory tract. It is advisable to stop persons from crowding together. Droplet infection is minimized by keeping people apart as much as possible. Rational closing measures should be adopted when epidemic diseases prevail.

Dr. J. O. Cobb, United States Public Health Service, Chicago: Dr. Hayne is right, as there must be rules and regulations for the health officer in the sparsely settled municipalities and communities; but cities like New York, Chicago and Detroit must have some other methods of dealing with the public during a terrible scourge like influenza. The problem must be looked at purely from what one can do and not what might be ideal. One can do in Chicago what he could not do in South Carolina. The prevention of the spread of influenza can be controlled by a properly made and worn mask. The schools should be kept open in all large cities and business allowed to go on as usual.

Dr. Thomas E. Maloney, Fall River, Mass.: Does closing close? Do masks mask? I am prompted to ask this question after the important statement made by Colonel Vaughan that influenza is a hand to mouth disease. So far as I have observed, in many of the rural communities in New England the incidence of the disease is much greater in rural than in industrial communities.

Dr. W. E. Moore, Sioux Falls, S. D.: When the epidemic started in my city we closed up everything for seven weeks, and when we opened wide we had an explosion of the disease, and now we are having more cases than ever. I advise the use of masks for nurses and others who are brought into intimate contact with patients suffering from influenza. An important question is, How long will the disease last? Schools and theaters and other places could not be closed forever.

Dr. J. L. Folkston, S. D.: I agree with Dr. Inches. After the influenza began we secured a supply of the Rosenow vaccine from the Mayo Foundation, and with the free use of this vaccine we have lost only one patient. In regard to the mask, I have told my people not to wear them. I believe that masks are just as filthy a thing as a big, long mustache.

Dr. H. Delamater, St. Joseph, Mo.: The first case of influenza in St. Joseph came from the Great Lakes, September 15. We realized that influenza is a contact disease. We isolated our cases from the start. We do not advocate the use of masks. The mask has been abused and damned by many members. If the mask is condemned for influenza, then why not condemn it in cases of diphtheria, scarlet fever, etc.?

Col. H. S. Cumming, Newport News, Va.: I believe in the value of the mask. It acts as a barrier between the hand and mouth rather than between the mouth and the outside air. Influenza as a crowding disease is a misnomer. When individuals have gathered together in large crowds for the purpose of commercial exchange or theater parties, the incidence of the disease has not markedly increased; but when people have gathered together in large crowds for the purpose of eating, there has generally been an explosive outbreak.

Dr. Frederick Montizambert, Montreal: I believe in the use of the masks for nurses and others who come in contact with the sick. After the mask has been used for a certain time, the circle opposite the mouth becomes moist; and moist surfaces will not receive droplet infection. The droplets will not dry off, and consequently they are sucked into the moist surfaces and protection is not afforded. A dry mask will stop droplet infection. Masks should be frequently changed. Another point in connection with the wearing of the mask is the possibility of infection from the conjunctiva. It is not sufficient to protect the nostrils and mouth, and nurses and others who are stooping over in influenza cases are exposed to droplet infection and should wear masks with transparent eye pieces.

Dr. Milbank Johnson, Los Angeles: I should like to speak of frequent hand shaking in America as a possible factor in conveying the disease. Americans can profit by the custom of the Chinese to shake their own hands as a greeting rather than those of others. If influenza is a contact disease, it makes no difference what kind of a micro-organism is causing the trouble. Doubtless the shaking of hands is a factor in causing its spread and a method of conveying respiratory diseases. I would urge the members to follow the Chinese custom and see if there is anything in it; it does not cost anything.

Treatment of Influensal Pneumonia with Plasma of Convalescent Patients

Lieut. Frank W. Hartmann, U. S. Navy: To be published in The Journal.

DISCUSSION

Dr. S. R. Pietrowicz, Chicago: My experience has been limited to several hundred cases seen at the Cook County and St. Mary's hospitals, but I believe there is an era of awakening regarding this form of treatment for respiratory diseases. Many physicians still suffer with airophobia and keep their patients in hot rooms, but at the Cook County Hospital the first thing done was to place the patients in rooms with open windows, keeping them well covered, and we found that fresh air is the cornerstone of therapy. Even patients who were cyanotic were greatly benefited almost immediately by this treatment. This has convinced us that fresh air has certain specific properties. First, it is a tonic, then a sedative, a stimulant, and finally an antipyretic. I am sure that its chemical value, its physical value, its respiratory and cutaneous value cannot be overestimated, and this method

of treatment should be used more extensively. The contra-indications for this treatment are very few—old age, extreme youth, and patients with profuse hemoptysis.

DR. A. A. GOLDSMITH, Chicago: I have been under the impression that every man has a different treatment for influenza and pneumonia, and yet has obtained practically the same results, except perhaps at the Great Lakes and other cantonments where the mortality was very high. I thought that certain of the cases were doomed from the start and no treatment, unless perhaps the serum, is of any value. I believe in the fresh air treatment and quiet conditions and think that aside from these one has very little power over the course of the disease. Often patients are continuously stimulated and go on to a fatal termination when, if they had been left alone, many would have recovered. During the last ten years I have tried to leave my patients alone, allowing them to rest as much as possible, giving codein for the cough, if it was necessary, and occasionally morphin, but not bothering about the stimulation. If the toxemia can be combated, that is all that is necessary; and if patients are kept quiet and allowed to sleep, the mortality will be lowered.

DR. H. N. BUNDESON, Chicago: The serum treatment of pneumonia and influenza I believe is of great value, just as like procedures have given similar results in scarlet fever and diphtheria. From the reports of various workers it appears to be almost a specific. The doses should be large, 200 c.c. of convalescent serum given very slowly over half or three quarters of an hour. If there is not a quick drop in the temperature within a short time, another 200 c.c. should be injected. I believe one cause of failure in this treatment is that patients coming from one part of the country are injected with serum from a man from another part of the country, and the serum is probably of a different type. The best results can be obtained from the same type of serum in the same hospital. I believe the serum treatment is efficient only when given early, which is true also of the antidiphtheritic serum.

LIEUT. L. R. MELNIKOFF, Great Lakes Naval Training Station, Ill.: The conclusion at the base hospital at the Great Lakes is that the so-called wonderful cures that have been reported outside of the Army and Navy camps have not been cures of influenzal pneumonia, but of straight influenza or acute cold. On the postmortem table there was no normal tissue left in the lungs in the cases of influenzal pneumonia. The serum treatment has been tried early in the epidemic with very little success, but it is not the same method as that used by Dr. Hartmann. Venesection cannot be successfully done because the circulation in our cases was practically nil and the blood clotted too rapidly. Pneumonia patients did better in the hospital units than those in tents, and most cases were treated in that way. Calomel and salts were given, and in the early cases, some acetylsalicylic acid; but this was soon discontinued, as it was found to be a depressant. If the pulse was over 100, we gave 15 minims of digitalis every three hours. Codein was given in very small doses for the cough and fluid was given frequently, but very little catharsis was employed. Whisky should very seldom be given except as nourishment. Of 3,000 cases at the base hospital, from 20 to 30 per cent. developed pneumonia, and of these about 20 per cent. resulted fatally.

DR. A. C. TENNEY, Chicago: I wish to mention a modification of the vaccine treatment as a preventive measure, thinking that the members may be interested in the results of several years' experimentation and observation, checked by laboratory tests. The idea is simply to furnish an excess of nucleinic acid in the region where the vaccine is introduced. The tissues must be thoroughly massaged after the hypodermics are given. The vaccine selected is introduced in the usual manner, and centrally from that point a dose of nucleinic acid is introduced. I recommend this procedure to those who wish to prevent pneumonia and influenza or a mixed infection from which so many people are suffering. Veratrum viride is not a new remedy. Four years ago it was shown to increase the opsonic index, and this drug in connection with hexamethylenamin has been my mainstay in the treatment of the present epidemic.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Orthopedic Surgery, Boston

September, 1918, **16**, No. 9

1 Cystic and Fibrocystic Disease of Long Bones. Report of Cases. H. W. Meyerding.—p. 253. (To be continued.)
2 *Practicability of Equalizing Unequal Legs by Operation. F. J. Fassett.—p. 277.
3 Organization of Division of Orthopedic Surgery in U. S. Army with Expeditionary Force. J. E. Goldthwait.—p. 288.
4 *Treatment of Club Foot in Infancy. E. L. Scott.—p. 290.
5 *Rational Treatment of Bone and Joint Tuberculosis. S. A. Twinch. —p. 295.
6 Case of Congenital Deformities of Arms and Legs. C. A. Parker. —p. 302.

2. **Equalising Unequal Legs.**—Seven cases are cited by Fassett in which unequal legs were equalized by operative shortening or lengthening. In several instances, three-quarters of an inch was added to the length of a femur, but at a cost of time and hardship too great in comparison with the gain. The bone was divided in a Z-shaped manner—as is done in tendon lengthening. The reason that no more than three quarters of an inch could be gained was not the danger to vessels and nerves, but the fact that these structures are all too well protected by the great strength of the fibrous tissue of the leg. Fassett is of the opinion that if the problem were to be further studied along this line it would seem that the hope of greater gain would lie, not in the application of greater force; but in the clean division of more tendons, fascial bands, or intermuscular planes. Two inches and a quarter and, probably, three inches may be subtracted from the length of a femur without serious loss of muscle tone. This procedure was employed in three cases. If the subtraction method is chosen, the simpler the technic the better. Much was hoped by Fassett from a pattern of osteotomy in which the bone was split first by two longitudinal saw clefts in planes at right angles to each other, and transverse cuts made at two different levels so that four interlocking "fingers" were formed. In the model and in the cadaver, this allows a telescoping movement of the fragments which seems compatible with great firmness. But in the elastic bones of children and young adults Fassett found that this device is not worth the time required to use it in the operation. The operation of choice would appear to be the removal of a simple cylinder of bone of proper length and the fixation of the approximated fragments by a bone splint or Lane plate.

4. **Treatment of Club Foot in Infancy.**—Assuming an infant with a positive degree of talipes equino varus, the procedure as suggested by Scott would be as follows: At ten days, even much later in most cases, without an anesthetic, the foot is gently manipulated against the resisting structures. Moderate force is used. With the thigh flexed on the abdomen and the leg flexed on the thigh, a tight adhesive plaster strapping is done to the foot, going in the usual way. Shingle straps are applied over the long piece of plaster to insure adhesion. This should correct, to some extent, the inward torsion. The foot is left in this position for about an hour. Then a plaster-of-Paris cast is made of the foot and leg. In the prehardening stage, the thigh is again flexed on the abdomen and the leg on the thigh, the foot is firmly grasped and a forced position, giving as much correction as possible, is taken and held until the plaster is fairly rigid. As soon as expedient, the plaster cast is removed. The original adhesive strapping is removed from the foot, new straps are applied, and the child dismissed for a day.

The plaster model is now corrected by sawing and fitting to conform to the cast of a normal foot. Having corrected the principal elements, equinus and varus, and having overcome the outward bowing of the tibia, the model is shaved off under the outer metatarsals, sandpapered, covered with stockinette, and a cast, of desired thickness, is applied very tightly. By heating and drying, a very strong, light cast is obtained. This is applied to the child's foot and held in place by three straps of adhesive plaster, one at the top, one

around the ankle joint, and one across the heads of the metatarsals. These casts can be renewed each ten days. No pressure points or excessive constriction being allowed, the child wears the cast with comfort after a few hours. By measurements of the foot, taken by direction, changes can be made in the model for each cast.

5. **Tuberculin Treatment of Bone and Joint Tuberculosis.**—Twinch records his experiences with the tuberculin treatment of bone and joint tuberculosis. Under modern tuberculin treatment his recoveries have averaged 68 as against 34 per cent. when treated without tuberculin. In addition, the period of treatment of recovered cases averaged only eleven and a half months, while the average time of treatment of recovered cases without tuberculin was five and one-fourth years. Twinch ascribes his good results to the fact that tuberculin acts favorably on the primary focus of infection in these cases. Tuberculin checks the local process, the individual also regaining and maintaining strength not attained by treatment alone on general hygienic and orthopedic lines.

Annals of Surgery, Philadelphia

October, 1918, 68, No. 4

7 *Radium Treatment of Tumors of Superior Maxilla. H. H. Janeway.—p. 353.
8 Surgical Treatment of Trifacial Neuralgia. W. Sharpe.—p. 371.
9 *Surgical Treatment of Certain Diseases by Splenectomy. J. Sherren.—p. 379.
10 Surgical Aspects of Right Subphrenic Abscess. J. Burke.—p. 383.
11 Case of Hypernephroma of Falciform Ligament of Liver. A. H. Harrigan.—p. 395.
12 Low Lateral Incision and a Method of Nerve Block for Appendectomy. L. F. Watson.—p. 397.
13 Surgical Pathology of Human Prostate. O. S. Lowsley.—p. 399.
14 Human Seminal Vesicles at Birth. Their Fetal Development. E. M. Watson.—p. 416.
15 Transverse Ectopy of the Testis with Masculine Uterus, Report of Case. T. Kimura.—p. 420.
16 Case of Giant-Cell Growth of Bone and Tendon Sheath. L. W. Ely.—p. 426.
17 Intestinal Obstruction Produced by Reagination of Ileum Into Urinary Bladder. W. H. Barber.—p. 429.
18 Surgical Closure of Wounds. G. Debelly.—p. 430.
19 Physical Factors Influencing Infection. W. Martin.—p. 436.

7. **Tumors of Superior Maxilla.**—Fifty-five cases of tumor of the superior maxilla, treated by radium, assisted when necessary by a conservation operation, are analyzed by Janeway. These tumors included eight benign tumors and forty-seven malignant growths, of which four were sarcomas and forty-three epitheliomas. Of the forty-three patients with carcinoma of the superior maxilla a complete retrogression to date has been obtained in eight. Only one of these eight patients has not been traced. Two are within a few months of the three-year period. The other five have passed a little over one year since their treatment was administered. Janeway emphasizes the fact that a percentage of clinical cures to date of 16.2 per cent. in a series containing many advanced and inoperable cases promises a more favorable result by the method used than can be obtained by operation alone.

9. **Surgical Treatment of Diseases by Splenectomy.**—Fourteen splenectomies for disease were performed by Sherren with one death—a boy of 14 on whom the operation was performed for advanced cirrhosis of the liver. The remaining cases were distributed as follows: splenic anemia and Banti's disease, nine; Gaucher's splenomegaly, one; hydatid cyst of spleen, one; splenomegalic jaundice, two.

Bulletin of Johns Hopkins Hospital, Baltimore

November, 1918, 29, No. 333

20 Development of Human Verumontanum. E. M. Watson.—p. 241.
21 *Electromyographic Studies of Clonus. S. Cobb.—p. 247.
22 Lavoisier and History of Physiology of Respiration and Metabolism. Contemporary Views of Life Processes. J. C. Hemmeter.—p. 254.

21. **Electromyographic Studies of Clonus.**—A few cases were studied intensively by Cobb by means of the string galvanometer and the results seem to show that clonus gives a typical electromyogram, the details of which, perhaps, throw light on the nature of clonus. Beginning slowly, the periods between contractions soon shorten to a constant length, and this periodicity then varies not at all with fatigue, and only slightly with change of muscular tension. Clonus was kept up for half an hour in one case. In different individuals the average length of these periods varies only by a few hundredths of a second, the shortest being 0.12 second and the longest 0.17 second. The apparatus used for recording the action currents of the muscles studied was the string galvanometer designed by Dr. H. B. Williams. This is a standard machine such as is used in "heart stations" for electrocardiographic work. The optical system and recording camera were also the stock type, except that a special gear was introduced to give greater speed to the film; with this addition a speed of from 20 to 27 cm. per second was obtainable. Five patients were intensively studied; two of these had patellar clonus alone, two had ankle clonus alone, and one had both patellar and ankle clonus.

Florida Medical Association Journal, Jacksonville

October, 1918, 5, No. 4

23 Treatment of Gonorrhea in Male. J. H. Coffee.—p. 60.

Georgia Medical Association Journal, Atlanta

October, 1918, 8, No. 6

24 Goiter, Results in Seventy Operated Cases. W. S. Goldsmith.—p. 111.
25 Roentgen Diagnosis in Empyema Simulating Other Diseases. W. A. Cole.—p. 114.
26 *New Incision for Surgery of Gall-Bladder and Ducts. C. Usher.—p. 118.
27 Treatment of Lobar Pneumonia. J. W. Palmer.—p. 118.
28 Veratrum Treatment of Pneumonia. S. T. R. Revill.—p. 121.

26. **New Incision for Surgery of Gallbladder and Ducts.**—The incision Usher advocates is the Judd modification of Bevan's incision, except that the peritoneum is cut at an angle of about 45 degrees, or along near the borders of the ribs. The advantages are said to be that the peritoneum is strong in this locality, in fact almost a muscle. Sutures do not tear out readily, as sometimes is the case when the peritoneum is cut straight up and down; there is little likelihood of cutting the diaphragm, an accident that might happen when the peritoneum is cut straight up and down.

Journal of Immunology, Baltimore

September, 1918, 3, No. 5

29 *Complement Fixation Reaction in Tuberculosis. M. A. Wilson.—p. 343.
30 *Id. H. von Wedel.—p. 351.
31 Rôle of Immunity in Conduct of Present War. J. A. Kolmer.—p. 371.
32 Mode of Action in Vitro and Preparation of Hemolytic Antibodies. A. K. Balls and J. H. Korns.—p. 375.
33 *Bleeding Guinea-Pigs and Preserving Sheep's Erythrocytes. J. J. Wenner.—p. 389.
34 *Studies in Pneumonia. Skin Reaction to Pneumotoxin. C. Weiss and J. A. Kolmer.—p. 395.
35 *Method of Preparing Bacterial Antigens. J. C. Small.—p. 413.
36 Saponin Hemolysis. T. Puruhata.—p. 423.

29. **Complement Fixation Reaction in Tuberculosis.**—Wilson describes a technic which she believes has increased the efficiency of this test. It has to do with the standardization of the guinea-pig's serum to determine the value of the complement. Not all guinea-pigs' serums are efficient for tuberculosis complement fixation. Therefore, the serum from each guinea-pig should be tested for fixability with tuberculosis antigen plus tuberculosis serum before pooling the complement for diagnostic tests. The method of standardizing the complement, the preparation of our tuberculosis antigen, and the diagnostic test, are described in detail.

30. **Complement Fixation Reaction in Tuberculosis.**—Wedel made 1,078 complement fixation tests on 200 specimens of blood serum taken from persons with no clinical history of tuberculosis, and from persons with active, inactive and primary pulmonary tuberculosis. The technic employed was similar to that originally used by Wassermann with slight modifications. The complement fixation results on serums from positive cases made the first day after taking the specimens were negative or weakly positive in a very large percentage of cases; while in most instances, seven days later these same serums gave a strongly positive reaction and continued to give this strongly positive reaction week

after week with unvarying regularity. None of the non-tuberculous serums gave a positive reaction the second, third, or fourth week after the specimen had been obtained from the patient. Of all positive serums in the series, only twelve gave a 3 or 4 plus reaction the first day tested. After being preserved in the ice-box under sterile precautions for seven days, forty-nine serums gave 3 or 4 plus reactions. Of eighty-two serums from tuberculous cases of all types that gave negative or doubtful reactions the first day, the results on the seventh day were positive in thirty-seven. The reactions apparently did not change after the sixth day.

Wedel's experiments confirm those reported by Wilson (see Abstract 29) but are in disagreement with all of Corper's conclusions. First, because in Wedel's series of cases there were twenty-six specimens from patients that gave positive Wassermann reactions but offered no physical symptoms of tuberculosis. None of these gave any cross fixation with the Wilson tuberculosis antigen. Second, in no instance did Wedel obtain a positive reaction using double the regular amount of sterile patient's serum in his entire series of known nontuberculous cases. Third, he never found the Wilson antigen to be anticomplementary in four times the dose used in the test, if the antigen is heated at 55 C. for one half-hour just before being used. Fourth, his tests in the active tuberculous cases gave 98 per cent. of positive reactions. Fifth, the very slight turbidity produced by the antigen in no way interferes with the reading of the results. Wedel insists that pooled complement from at least six guinea-pigs should be used in making the tests, or the complement from single pigs should be tested for its complement fixation value with known positive serums. Double the original Wassermann amount of patients' serum should be used. No report should be made until the serum has been tested after having been kept under sterile conditions in the ice chest for from four to six days, preferably six days. Wedel's results seem to indicate that with these modifications of the original complement fixation tests, 100 per cent. of nontuberculous cases will give absolutely negative results; nearly 100 per cent. of the primary and active cases will give positive results, with the exception of the dying persons; and about 25 per cent. of the partially inactive and inactive cases will give only weak positive results.

33. **Preservation of Sheep Corpuscles.**—For the preservation of sheep's erythrocytes, Wenner collects the blood in a sterile bottle containing shot or glass beads, and at once defibrinates it. It is then filtered through sterile cotton into another sterile bottle and the quantity of fibrin-free blood is estimated. This estimation is made readily in a previously graduated bottle; it is often more convenient to determine the quantity by measuring an equal amount of water placed in a similar bottle. One part of 40 per cent. aqueous solution of formaldehyd is added to 800 parts of blood. This formaldehyd-treated blood is kept in the ice box as a stock supply. Whenever erythrocytes are needed, the necessary amount of blood is removed and centrifuged, and the corpuscles washed three times with 0.85 per cent. saline solution.

34. **Skin Reaction to Pneumotoxin.**—The work reported by Weiss and Kolmer is a part of the studies on the properties of pneumotoxin and its probable rôle in the pathology of lobar pneumonia. Guinea-pigs previously sensitized with sublethal doses of pneumotoxin or with the serum or lung exudate of dogs suffering from experimental lobar pneumonia, reacted to the intracutaneous injection of 0.1 c.c. of the toxin by a local erythema and hemorrhagic edema in the subcutaneous tissue overlying the muscle. The skin reaction to heat-killed pneumococci was negative in most of these animals, and when positive, was of a suppurative type, marked by less edema and more leukocytosis. Control animals gave uniformly negative results. Among human adult cases of lobar pneumonia the reaction (which was characteristically that of a local edema and erythema) was elicited as early as the fifth and as late as the thirteenth day of the disease (two days before and six days after the crisis, respectively). In children it was demonstrable about the same time, but was negative immediately or one or two days after the crisis. Patients recovering by lysis reacted as late as the thirty-second day. In general, the test was positive in all active cases, that is, throughout the toxemia. Cases earlier than the fifth day of the disease were not available. Control patients, suffering with bronchopneumonia or with acute or chronic infections not of pneumococcic origin, as well as healthy adults and children did not react. The reaction is regarded by the authors as indicative of a state of allergy to pneumotoxin.

35. **Preparing Bacterial Antigens.**—A chloroform-ether extraction was used by Small to remove the fat-like substances from dried bacteria. After thorough extraction the residue was freed from traces of these solvents and suspended in sterile salt solution. The principles concerned in complement deviation are left behind in this extraction, and the extract contains substances that interfere with the complement-deviation reaction, hence this separation is, in itself, highly desirable. A further advantage is that the chloroform-ether extraction uniformly affects all cells by removing water-insoluble substances and so breaks up the integrity of the individual as to facilitate subsequent aqueous extraction. Complete extraction of the water-soluble fraction cannot be assured since the cellulose fraction left unchanged in the bacterial cell may be so distributed as to impair aqueous extraction. The use of the whole suspensions of this chloroform-ether extracted bacterial residue appears to supply any incompletely extracted bacterial particles to the complement deviation reaction, so that incomplete extraction does not entail a dead loss of the complement deviating substances. To obviate bacterial contamination, which seems to be in some way responsible for a sudden anticomplementary change, the bacterial residue was dried after the last washing with ether, and intimately mixed with eight and one-half times its weight of sodium chlorid. This bacteria-salt mixture was reduced in a mortar to a very fine powder. For use this powder is suspended in distilled water, 0.95 gram per 100 c.c. of water making the right proportions. This is shaken until, on solution of the salt, an evenly distributed, slightly opalescent suspension of the bacteria is effected. Prepared in this manner it yields a 0.1 per cent. suspension of bacteria in normal salt.

Journal of Parasitology, Urbana

September, 1918, 5, No. 1

37 Iguana Tick, Amblyomma Dissimile, in Panama. L. H. Dunn.—p. 1.
38 Study of Parasitic Protozoa. R. Kudo.—p. 11.
39 Acanthocephals of Subfamily Rhadinorhynchinae from American Fish. H. J. Van Cleave.—p. 17.
40 Two Species of Nematodes [Gongylonema Ingluvicola Ransom, 1904, and Capillaria Strumosa (Reibisch, 1893)] Parasitic in Crop of Chickens. L. D. Wharton.—p. 25.
41 Two New Nematodes Common in Some Fishes of Cayuga Lake. M. Wigdor.—p. 29.
42 Development of Gregarines and Their Relation to Host Tissues: (II) in Cephaloidophora Delphinia (Watson) M. W. Kamm.—p. 35.
43 Life Cycle of Fowl Cestode, Davainea Cesticillus (Molin). J. E. Ackert.—p. 41.

New York State Journal of Medicine, New York

November, 1918, 18, No. 11

44 Differential Diagnosis Between Chronic Gastric Ulcer and Carcinoma of Stomach. S. Basch.—p. 427.
45 *Incidence of Peptic Ulcer and Carcinoma in Duodenum. J. A. Lichty.—p. 433.
46 *Surgery vs. Radium in Treatment of Carcinoma of Bladder. B. S. Barringer.—p. 436.
47 War A School of Surgery. S. Smith.—p. 430.
48 Epidemic of Typhus in Roumania. R. H. Rulison.—p. 443.
49 Problem of Venereal Disease Control. A. N. Thomson.—p. 451.
50 Recent Factors in Control of Venereal Diseases in State of New York. M. Nicoll, Jr.—p. 455.

45. **Peptic Ulcer and Carcinoma in Duodenum.**—Analysis of a series of 486 patients with duodenal lesions showed that six were cancerous and 480 were benign ulcers, a ratio of one to eighty. In a series of 780 patients with gastric lesions 240 were found to be cancerous and 540 were benign, a ratio of one to two and a fourth. In reviewing his own cases, Lichty found but six cases of carcinoma of the duodenum, and about 240 cases of carcinoma of the stomach, a ratio of one to forty. These diagnoses of gastric carcinoma

were largely verified by necropsy or operation. When neither necropsy nor operation was done, the diagnosis was confirmed by the inevitable course of all cancer cases. Reviewing over 1,000 cases of peptic ulcer, collected during the same period in which the cancer cases were collected, Lichty found a diagnosis of ulcer of the duodenum had been made 480 times, whereas ulcer of the stomach was diagnosed 540 times.

Another interesting observation of this study was the location of the carcinoma in the duodenum. Most reports seem to be of growths which come directly from the pyloric ring or immediately from or about the papilla of Vater. This fact is confirmed very strikingly in the six cases of cancer of the duodenum which Lichty reports. None were found in that area which is most frequently the seat of peptic ulcer. Lichty wonders, if carcinoma of the stomach arises so frequently (50 to 70 per cent., according to some) from a peptic ulcer, why does not carcinoma occur more frequently in the doudenum where peptic ulcer abounds? He throws out the suggestion that the etiologic and determining factor of carcinoma of the stomach may be something entirely independent of peptic ulcer.

46. **Surgery vs. Radium in Cancer of Bladder.**—Barringer maintains that if surgery could cure fifteen cases in 100, radium could cure twenty cases. He reports seven cases, in five of which a cure was effected with radium.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Nov. 9, 1918, **2**, No. 3019

1 Influenza Epidemic in the British Armies in France, 1918. Committee of Advisory Board to D. G. M. S., France.—p. 505.
2 *"Spacing Out" in Prevention of Military Epidemics of Cerebro-Spinal Fever. J. A. Glover.—p. 509.
3 *Case of Subacute Infective Endocarditis. B. Hudson.—p. 512.
4 *Case of Intestinal Obstruction. J. M. W. Morison and L. White.—p. 513.
5 Pyloric Stenosis with Accompanying Spasmodic Dysphagia. E. B. Barton and H. H. C. Dent.—p. 514.
6 Inequality of Pupils. T. S. Barrie.—p. 514.

Nov. 16, 1918, **2**, No. 3020

7 *Investigations on One Thousand Consecutive Cases of Peripheral Nerve Injury. J. Le F. Burrow and H. S. Carter.—p. 535.
8 Past and Future of Crusade Against Tuberculosis. M. Morris.—p. 539.
9 Treatment of Ante-Natal and Post-Natal Syphilis. J. Adams.—p. 541.
10 *Method of Overcoming the Adherence of Tendons After Suturing. P. C. C. Fenwick.—p. 542.

2. **"Spacing Out" as Influenza Preventive Measure.**—Glover urges that when a unit shows a high carrier rate, a distance of at least 2½ feet between the beds should be enforced. This is the "spacing out" referred to in the title.

3. **Subacute Infective Endocarditis.**—The remarkable features about Hudson's case were the insidious and slow progress (eight weeks), the absence of any definite cardiac symptoms, and the fact that the heart never became enlarged, in spite of the severity of the aortic lesion and the long duration of the case. This is attributed to the fact that the large vegetation prevented any real leaking of this valve. The patient was never really "cardiac"; there was no dyspnea or edema, and the pulse maintained a steady, regular, slow beat till the end. He was in a "typhoid" state throughout the disease, and died eventually of a slow toxemia.

4. **Intestinal Obstruction.**—The case reported by Morison and White was an instance of intestinal obstruction due to the healing process of old tuberculous ulcers of the bowel, possibly secondary to a lung infection. Forty years elapsed between the primary attack, and the period during which the patient showed symptoms and was extremely ill.

7. **Peripheral Nerve Injury.**—Burrow and Carter describe in detail their method of examination of nerve injury cases. Their observations after nerve repair point to the following general facts: Trophic and vasomotor functions recover first. Trophic ulcers may heal surprisingly quickly after repair of peripheral nerves. Deep sensibility recovers next, and usually in the order of sense of pressure, perception of movement in joints, etc., and then roughness and pressure pain. Accurate gaging of position and range of movements are slower in their reappearance. Localization of tactile pressure recovers earlier. Radiating, ill-localized sensations, referred to wide areas and usually associated with tingling, appear next; they have a high threshold value, and conform largely to the "protopathic sensation" of Head and Rivers. Next in order come accurate perception of light touch with a gradual disappearance of radiating sensations and a gradual lowering of the threshold value of the stimulus required to obtain responses from the patient. Last of all, and very imperfectly as so far observed, appear the discriminating sensations—that is, stereognostic sense, etc., and lowering of threshold value to those of normal skin. Voluntary movement appears in the highest members of a group of muscles first, and gradually extends downward, as a rule. Motion usually follows the return of "protopathic" sensation. It is present long before the radiating ill-localized sensations are abolished.

10. **Overcoming Adherence of Tendons After Suturing.**—Fenwick cites a case in which he wound thick catgut around each reunited tendon to prevent adherence to the scar and surrounding tissues. The result was excellent.

Edinburgh Medical Journal

November, 1918, **21**, No. 5

11 Habitual Constipation. J. Ritchie.—p. 253.
12 *Treatment of Splenomegaly with Anemia in Syphilities. J. Eason.—p. 258.
13 Teaching Obstetrics to Under Graduates. J. H. Croom.—p. 268.
14 Id. A. H. F. Barbour.—p. 274.
15 Id. F. W. N. Haultain.—p. 280
16 Reasons for Present Defective Education in Obstetrics, with Suggested Remedies E. H. Tweedy.—p. 283.
17 Teaching Obstetrics and Gynecology. J. S. Fairbairn.—p. 286.
18 Id. V. Ponney.—p. 290.
19 Id. N. T. Brewis.—p. 291.
20 Id. J. H. Ferguson.—p. 294.

12. **Treatment of Splenomegaly.**—A case of splenic anemia is recorded by Eason in which the Wassermann test was positive and antisyphilitic treatment produced definite improvement. The Wassermann test remained positive. The results obtained from specific and surgical treatment are compared by reference to seven collected cases. The late result in one operation case is also noted. The rationale of the surgical treatment is briefly considered. With regard to the management of such cases of syphilitic origin simulating Banti's complex, Eason believes that in the first instance all cases should have very thorough antisyphilitic treatment. No great harm and much improvement may result from this when carried out with care while watching the effect of each injection on the blood. If this has been done, and the Wassermann test still remains positive, operation then becomes almost as necessary as for cases of the orthodox Banti type. The need for operation would not be quite so urgent if from time to time renewed specific treatment were known to rearrest activity. As this prospect is meantime based solely on hypothesis, the indication for operation is practically the same as in Banti's disease, if specific treatment has already failed.

Lancet, London

Nov. 16, 1918, **2**, No. 20

21 Principles of Neurology. H. Head.—p. 657.
22 *War Nephritis. Clinical Study of Early Cases. H. B. Day.—p. 660.
23 Nephritis in Relation to Recent Epidemic of Influenza. C. P. Symonds.—p. 664.
24 *Tuberculous Disease of Hip-Joint. Sign of Pathological Activity. H. J. Gauvain.—p. 666.
25 *Treatment for Septic Sores and Nile Boils. H. W. Crowe.—p. 667.

22. **War Nephritis.**—The result of Day's inquiry in fifty cases confirms Abercrombie's statement, founded on 500 cases, that the onset of war nephritis was almost invariably attended or preceded by fever. The first symptoms of actual nephritis are an increasing breathlessness and the appearance of edema, generally with more or less cough, headache and pains in the back and legs. Urinary symptoms are only complained of in the special lower tract type. It is impossible to judge of

the severity and outcome of the disease from the nature of the early symptoms. The first sign of approaching recovery is the spontaneous appearance of a diuresis which quickly reduces the edema. This event may occur within a week of the onset in mild cases or be deferred for a month or longer in other patients, while severe cases may reach a tardy convalescence without sudden polyuria. If percussion is employed as well as palpation a definite increase in the size of the spleen can be made out in most cases of trench fever, although it is impossible to feel the organ when it was only moderately enlarged. The use of this combined method, when daily examinations are made, gives most interesting results in trench fever. In all cases where a previous enlargement was excluded the spleen showed alternate advances and recessions at regular intervals of five or six days (rarely four and a half days). This phenomenon occurred in every form of the disease, whether the fever was relapsing or continuous, and in cases where no definite febrile relapse followed the initial bout a second descent of the spleen was evident at the usual interval. The signs of periodicity of this disease evidently are closely related to the accompanying changes in the spleen.

As to complications, bronchitis is very common in the early stages, particularly in patients with considerable edema, or who are suffering from a winter cough—so common in the trenches. As a rule it disappears with the subsidence of edema, but may develop into a septic process with purulent sputum and slight fever. It has been suggested that the relapses seen in war nephritis are due to complications in most cases. Day's experience does not support this view. Other complications, such as uremia, retinitis, cerebral hemorrhages, etc., may occur as in other forms of nephritis. Day believes that the seasonal incidence of war nephritis points to cold and exposure as predisposing agents.

24. **Active Tuberculous Disease of Hip-Joint.**—The most constant and most marked evidence of activity of this disease Gauvain says is spasm of the muscles about the affected joint. As the disease becomes less acute spasm becomes increasingly difficult to demonstrate, until eventually it completely disappears. It may last be elicited in the following manner: If the femur, on the affected side, be grasped firmly in the region of the condyles, the head of the bone may be rotated gently within the acetabulum, either inward or outward, through a varying but often considerable angle. When the disease is active, a further slight sharp rotation is instantly followed by spasmodic muscular contraction, not confined to muscles about the joint but extending to the abdomen and visible in the abdominal muscles, or still more easily demonstrated if the palm of the hand is placed on the abdomen between the iliac spines. Quite a gentle and painless but sharp rotary movement is sufficient to provoke this reflex spasm of the abdominal muscles. In those cases where doubt exists as to the activity of the disease, Gauvain has found it to be a sign of the utmost value. Confirmatory evidence of activity, as indicated by muscular spasm, may at the same time be demonstrated in the following manner: In a child, a finger and thumb of the hand not engaged in grasping the femoral condyles may be applied simultaneously to the two anterior superior iliac spines. During the first rotation of the femur on the affected side no movement is conveyed to the iliac spines. When, however, rotation has been checked and is sharply but gently continued, exaggerated movement in the same direction is transmitted to the iliac spines. With a healthy joint this type of movement is not apparent, with a hip-joint affected with declining but still active tuberculous disease it is very striking, even when the disease otherwise appears to be quiescent.

25. **Septic Sores and Nile Boils.**—A vaccine prepared from a large number of strains of streptococci isolated from septic sores, combined with a similar series of a peculiar staphylococcus isolated from Nile boils, when given in frequent small doses, in conjunction with surgical measures of which the most important is the early incision of boils, Crowe claims to be of great assistance in the cure of these diseases. Increasing the dose of vaccine after cure is complete prevents relapse.

Bulletin de l'Académie de Médecine, Paris

Oct. 29, 1918, 80, No. 43

26 *The Germans at Lille. A. Calmette.—p. 382.
27 Colloidal Arsenic and Silver in Influenza. M. Capitan.—p. 388.
28 *Artificial Pneumothorax for Gangrene of Lung. P. E. Weill.—p. 393.
29 *Gas Gangrene in 1918. Sieur and R. Mercier.—p. 394.

26. **German Inhumanity at Lille.**—This protest was mentioned in the Paris Letter, page 1929. It is signed by four members of scientific organizations besides Calmette, and specifies a few of the *actes de barbarie* which they witnessed during the occupation of Lille by the enemy. "To list them all," they say, "would fill a volume." The sixty-fourth regimen of Pomeranian infantry, in charge of General Zöllner, during one week last spring selected and deported 10,000 girls and young women from private homes. Almost all the boys from 14 to 18 and the men of 60 to 65 were sent to build dugouts and roads at the front, carry munitions, etc., and the health of many of them has been wrecked, while many died. Leading men and women, to a total of 1,000, were carried off as hostages, Jan. 6 to 12, 1918, the men to Poland, the women to an internment camp in Brunswick. Among the twenty-five who died the first week was Professor Buisine, chief of the chemistry institute. He had heart disease, but the medical major (Dr. Krug) refused to exempt him, saying, "That is not contagious for the German army."

The protest continues: "The high command in Germany willed the war, but the people in arms approved it, and resolutely waged war with the most ferociously cruel means, even the physicians with the army doing the most odious acts without a word of excuse, regret or pity."

28. **Pneumothorax in Treatment of Gangrene of the Lung.**—Weill has found the outcome infinitely better with a gangrenous process in the lung when air is allowed to enter the chest. This causes the lung to retract, and the contents of the gangrenous focus are expelled in a vomica, after which recovery rapidly proceeds. The pneumothorax should be applied under screen control, and be completed and renewed a few days later. In a few cases he injected nitrogen, but usually air sufficed. It is extremely important to detect and thus treat a gangrenous focus of the kind before it has progressed to invade adjoining tissues, as the pneumothorax is impotent against this eventuality.

29. **Gas Gangrene.**—Sieur and Mercier report that the improved methods of rapid evacuation of the wounded and early surgical intervention have brought the cases of gas gangrene down to 0.29 per cent. of the wounded at the advanced posts; 0.19 per cent. in the intermediate zone, and 0.30 per cent. in the interior. Gas gangrene developed in the hospitals of the interior only in 0.068 per cent. of the men who had been operated on before. Aside from the wounded lying too long on the field untended and those with shock too severe to permit operation, it seems that gas gangrene can be avoided, even without specific serotherapy. Among the improvements realized is the recognition that crushing of muscle tissues invites gas gangrene, as also ligation of too many arteries. Surgeons now do not shrink from long incisions and extensive resection of lacerated tissues in such cases. Antigangrene serotherapy has already given encouraging results, and it offers legitimate hopes for prophylaxis.

Paris Médical

Oct. 5, 1918, 8, No. 40

30 Mild Secondary Syndrome of Measles. P. Nobécourt and C. Richet, Jr.—p. 261.
31 *Early Mobilization in Cases of Wounds. P. Kouindjy.—p. 262.
32 Vaccine and Serotherapy of Epilepsy. P. Guiraud.—p. 265.
33 *Albumin in Urine. L. Bauzil.—p. 269.
34 *Sugar Infusions. L. Duprat and A. Demolon.—p. 270.
35 Cancer of Greater Omentum. M. Haller.—p. 271.
36 Trophic Disturbances in Skin of Legs. R. Weill.—p. 274.
37 *Electric Treatment of Exophthalmic Goiter. Olivier.—p. 275.

31. **Early Mobilization After War Wounds.**—Kouindjy deplores that joints are still left to grow stiff when the slightest attempt at using the joint might have warded off the ankylosis or the atrophy. In a typical case described, a barbed wire wound of the hand resulted in a felon, and this was given thorough treatment with sunlight and other

measures, but no one heeded that the arm was being carried in a sling unduly long. By the fifth month fibrous ankylosis of the elbow had developed and has proved rebellious to date. Some of the fingers and the wrist are also stiff, and there was considerable atrophy but these have been remedied with time. He has also witnessed cases of ankylosis of the shoulder, after fracture of the radius, and of the ankle after a seton wound of the thigh. On the other hand, he cites some typical instances which demonstrate anew the advantages of early manual mobilization, and how it stimulates consolidation instead of retarding it. Here is a man with merely a felon on one finger, still crippled after five months, while another man with the shaft of the humerus shattered rejoined his company at the front in four and a half months. The shoulder, elbow and wrist were systematically exercised, with traction on the tendon of the biceps, and the different muscles in turn, except the biceps and those of the forearm and hand, were massaged under a jet of hot air. The arm was exercised further with a double pulley and different weights. No mechanotherapy, either active or passive, was applied as this seems to do more harm than good, when there is a tendency to early ankylosis, as in this case.

33. **Albumin in Urine.**—Bauzil determines the proportions of albumin in the urine by comparing the opacity, after addition of trichloracetic acid, with that of some test solutions.

34. **Sugar Solutions for Infusion.**—Duprat and Demolon spare the kidneys the work of passing through them the large molecules of sugar by having the sugar inverted before it is infused. This ensures also its assimilation, as saccharose or any C_{12} sugar is not utilized but is passed into the kidneys in toto. By inverting the sugar, it can be utilized. In one case of grave insufficiency of the liver, 200 gm. of the isotonic sugar solution was entirely utilized. The formula they give for an isotonic "sugar serum" is as follows: Saccharose, 5.4 gm.; distilled water, q. s. to 100 c.c.; normal solution of hydrochloric acid, 6 drops per 100 c.c. The hypertonic "sugar serum" is the same except that the amount of saccharose is doubled. It is sterilized at 100 C. for forty minutes and then at 110 C. for fifteen minutes. He sterilizes at the same time ampules containing 8 drops of a normal solution of sodium bicarbonate to 1 c.c. As the sugar serum is to be used, the contents of an ampule are added to it, thus neutralizing with 1 c.c. of the bicarbonate solution to each 100 c.c. of the sugar serum.

37. **Electric Treatment of Exophthalmic Goiter.**—Olivier reports two cases for which he bespeaks interest on account of the extreme gravity of the cases—death from inanition or heart failure was only a question of weeks—and the intensity of the electric treatment applied. The applications were with 60 volts and 80 milliampères, with large electrodes fitting well to back and neck. One patient took twenty-seven half hour sittings, the other forty-two, daily at first and later with intervals of a week. The women of 26 and 42 were soon restored to clinical health, and the younger has been successfully carrying on a large farm during the husband's absence with his regiment. Olivier tells them to take occasionally a pill containing a little ipecac, digitalis and opium at times of greatest strain.

Presse Médicale, Paris

Oct. 31, 1918, **26**, No. 60

38 *War Nephritis. A. Gouget.—p. 553.
39 Copper Sulphate in Therapeutics. De Hérain.—p. 555.

Nov. 7, 1918, **26**, No. 61

40 *Immediate Treatment of Spinal Injury. C. Villandre.—p. 561.
41 Indications for Transfusion of Blood in War Surgery. H. Costantini and M. Vigot.—p. 563.

38. **War Nephritis.**—Gouget analyzes his own experiences with 140 cases of nephritis among 7,256 men that passed through his hospital near the front between October, 1914, and March, 1918. Of the total nephritis contingent, seventy-four came from the infantry; seventeen, artillery, and six were hospital orderlies. Among the ninety-three recent cases, a third were evidently secondary to recent typhoid, gonorrhea, syphilis or chilling, and in five cases it had followed after vaccination against typhoid. In fully two-thirds no special cause could be discovered. This is about the same proportion as with nephritis in peace times. There is nothing in the clinical course or ultimate evolution of the cases in which they differ from nephritis under other than war conditions.

40. **Wounds of Spine.**—Villandre protests against the pessimistic views held by many in regard to traumatic injury of the spinal cord. A fracture of a vertebra is often assumed to be a severing of the spinal cord, and it is held impossible to send the man to a specialist center. Fracture of a vertebra impairs but very little the solidity of the spine, so that immobilization is not indispensable. The man should be taken to some point where he can get the collaborating care of a neurologist, surgeon and radiologist. From the very first all medical means should be applied to ward off eschars and urinary infection, and at the earliest possible moment everything liable to press on the cord should be cleared away.

Progrès Médical, Paris

Oct. 5, 1918, **33**, No. 40

42 Intravenous Injection of Camphorated Oil in Treatment of Shock. F. Ferrari.—p. 337; G. Jeanneney.—p. 340.

Oct. 12, 1918, **33**, No. 41

43 *Flatulent Dyspepsia with Exophthalmic Goiter. M. Loeper.—p. 345.
44 Quinin in Prophylaxis of Influenza. R. Tricoire.—p. 347.
45 *Physicians and Poetry. P. Voivenel.—p. 348.

43. **Flatulent Dyspepsia with Hyperthyroidism.**—Loeper states that in four of forty cases of exophthalmic goiter, there was diarrhea and in thirteen cases pronounced dyspepsia. In ten of this latter group there was a tendency to spasm of the esophagus, at different heights. The efforts at swallowing caused much air to be swallowed, and this induced flatulence and meteorism. The air in the stomach may impede its functioning, and there is always a possibility of direct toxic action on the stomach from the disease. Thus both mechanical and toxic factors may cooperate in inducing the type of flatulent dyspepsia in these cases. Improvement is realized by combating the aerophagia and also by operations on the thyroid or other measures to control the hyperthyroidism.

45. **The Nervous Potential.**—Voivenel theorizes that all men are born with an equal *sensibilité, affectivité* or *potentiel nerveux*. It manifests itself in different ways, but, like sap, it has to come up. Charcot, Janet and Freud have shown us the evil consequences of "blocking of the *Affect*." When the excitation, the potential energy does not find a natural outlet, when it cannot be dissipated in the ordinary routine of life, it finds expression in hobbies, in fads of one kind or another. In physicians, it often finds vent in poetry. "The number of practitioners who tickle the muses is legion." . . . "Most of them hide their identity when they do this, but the physician of the day is a philosopher, a *littérateur* or a poet in heart if not in outward manifestation." Voivenel gives a long list of living French confrères who have won recognition as playwrights, novelists or poets. He concludes his list with Prof. Charles Richet who, he says, "washed off anaphylaxis by plunging into poetry, and carried off one of the best academic prizes from under the noses of the professional poets." . . . "These side issues serve as a drain to their nervous potential. It does not go beyond this *menstruation de l'affect*." . . . "One plants roses, another plants cabbages. Which is worth most? It is a matter of opinion. Ask the caterpillars."

Correspondens-Blatt für Schweizer Aerzte, Basel

Oct. 26, 1918, **48**, No. 43

46 *Resection of Stomach. H. Iselin.—p. 1425.
47 Organotherapy of Menstrual Disturbances. O. B. Socin.—p. 1431.
48 *Tardy Mercurial Exanthem. M. Umansky.—p. 1435.
49 Clinical Demonstration of the Nerve Fibers in the Retina. J. Strebel.—p. 1442.

46. **Resection of the Stomach for Chronic Ulcers.**—Iselin refers in particular to callous ulcer of the lesser curvature and other ulcers nearer the cardia than the pylorus. He is convinced that only a radical operation will guarantee a permanent cure, while this is the only means to ward off malignant degeneration. He reports transverse resection done in thirteen cases, and while de Quervain applied the Billroth II technic and its modifications, Iselin preferred to restore

the stomach to its approximately normal outline, joining the halves left with a circular suture all around. In his seven cases the technic was entirely successful, and he cites similar experiences from the literature, as also experiences with recurrence of disturbances after mere gastro-enterostomy, and especially malignant degeneration. In eight of Iselin's total twenty-one cases the tumor already showed signs of cancer in the resected piece although, in some, clinically and macroscopically there had been no suspicion of malignant disease. In 1915 he resected the stomach for known cancer in nine cases, and in three the cancer had evidently developed from an ulcer, while an exploratory operation in another presented the same findings. There had been disturbances in these cases from six to twenty-four years. One woman after transverse resection in 1914 died later from cancer of the liver; necropsy revealed a carcinoma at the pylorus although the microscopic findings in the excised ulcer had been those of simple ulcer. It is possible that if the Billroth technic had been followed, this other cancer might have been removed also, so that with known cancer the Billroth II or I might be given the preference. It is possible further that the malignant nature of the excised ulcer might have been recognized if a larger piece had been examined under the microscope.

48. **Tardy Mercurial Eruption.**—Thirty-three days after a vigorous course of mercurial and arsphenamin treatment had been concluded, the man of 33 developed a generalized and severe dermatitis with high fever. By this time there were only traces of mercury in the urine, showing that the eruption could not have been due to cumulative action. Umansky believes that the previous treatment had modified the skin in such a way that an idiosyncrasy developed, although intercurrent functional disturbances of internal organs may have cooperated.

Policlinico, Rome

Oct. 6, 1918, **25**, No. 40

50 *The Epidemic of Influenza. T. Pontano.—p. 941.
51 *Epidemic Lethargic Encephalitis. G. Dragotti.—p. 952.
52 The Bipolar Influenza Bacillus not a New Type. M. L. della Vida. —p. 954.

Nov. 10, 1918, **25**, No. 45

53 *War Wounds of Nerves. M. Fasano.—p. 1077. Conc'n.
54 *The Bipolar Influenza Bacillus. R. Ciauri.—p. 1080.
55 *Activation of Malaria. E. Vecchia and M. Segre.—p. 1081.
56 *Soldering of Wire for Osteosynthesis. G. Egidi.—p. 1082.
57 *Technic for Cystoscopy. G. Egidi.—p. 1083.

October, 1918, **25**, Medical Section No. 10

58 *Medical Treatment of Dysenteric Abscess in Liver. T. Pontano. —p. 289.
59 *Clinical Forms of Malaria. A. Borgherini.—p. 308. Conc'n.

50. **Influenza.**—Pontano reports from the medical clinic at Rome, in charge of Ascoli, that the bacteriologic findings were negative both in blood and sputum except for the ordinary germs of the air passages. Inoculation of animals was negative. The influenza bacillus was not found. He thinks that the unknown, probably ultramicroscopic, germ of influenza modifies the lungs in such a way that other germs find ready access to the predisposed soil.

51. **Lethargic Encephalitis.**—The fact that the epidemic of lethargic encephalitis coincided in 1890 with the pandemic of influenza, suggests that it is a localization on the brain of the influenza virus. The disease has appeared anew in the last few months along with pandemic influenza. Both the encephalitis and the influenza commence with a similar onset of catarrhal rhinopharyngitis. Dragotti regards it as identical with the disease known as nona, which was prevalent in Italy at the time of the last pandemic of influenza.

53. **War Wounds of Nerves.**—Fasano concludes from the experiences in the Italian military hospitals that no time should be lost in thorough examination of men with painful paralysis. Operative relief should be given at once, as this wards off atrophy and ankylosis. When there are no pains, then it is open to discussion whether the gains compensate the disadvantages of operating before the wound is completely healed. During the entire operation, the nerve itself must be continuously flushed with tepid physiologic serum. It must never be left in contact with raw surfaces, but sound muscle or fascia must be drawn around to cover it.

54. **The Bipolar Bacillus of Influenza.**—Ciauri reports the results of further research on the diplomorphous hemoseptic bipolar bacterium which seems to be connected with influenza as described in these columns recently, p. 1700. Among its peculiarities is the long incubation; sometimes five days elapse before the colonies become unmistakable. The *a* form, gram-positive, stains violet with fuchsin, while the *b* form, gram-negative, stains red. These bacteria were cultivated from sputum, blood and urine from the patients and from agar plates breathed on by the patients at 25, or 40 cm. distance. The only animals tested were rabbits, guinea-pigs and fowls. Some of them developed a slow septicemia and the guinea-pigs showed hypothermia, the rabbits slight hyperthermia, but no macroscopic changes in the viscera. The bipolar bacillus proliferates after exposure to dry heat at 80 C. for one hour, and to the freezing point for five hours. The bacillus shows no further development after an hour of moist heat at 100 C. or exposure to 55 C. for five hours. No effect on the bacterium was evident from fifteen and three minutes' contact with 1 per 200,000 or per 100,000 mercuric chlorid solution. These findings although practically negative in the animals tested, yet harmonize with the epidemiology of the disease and suggest means for prophylaxis. The air around the patient contains the germ even in the absence of droplets, and the disease is shown to be septicemia. The practical conclusions are the necessity for free ventilation through the sick room, and redoubled vigilance, with masks, for the physicians and attendants.

55. **Strychnin Activates Malaria.**—Vecchia and Segre have noticed that a malarial attack is liable to follow a dose of strychnin, just as it follows chilling or other cause of abrupt reduction of the defensive forces. They found in Albania that men with old latent malaria had a flare-up attack when given strychnin, and that many of them under quinin then seemed to throw off the disease permanently. In certain others, not suspected of malaria, the strychnin brought on a malarial attack. The strychnin was being given for other reasons, mostly to combat asthenia. It stimulates the tissues throughout, and the malaria bacilli seem to be driven out of the tissues by the strychnin. They are thus exposed more effectually to the action of quinin, so that it seems logical to combine strychnin with quinin in treating old rebellious cases of malaria. Their success in twenty such cases they report as particularly interesting. They say in conclusion that a few large doses of strychnin would decide the question finally whether the malaria was absolutely cured.

56. **Soldering the Wires in Osteosynthesis.**—By this term Egidi means the rebuilding of the shattered bone by fitting all the parts into place and holding them with an encircling wire. The ends of the wire are usually twisted or knotted together, and he here makes a plea to have the ends soldered together instead of twisting them. In all mechanical work, wires are soldered, and nowhere would the advantages be more conspicuous than in the encircling wire of a reassembled bone. To solder a silver wire, he touches the ends where they cross with a pledget barely moistened with zinc chlorid. On this is placed a scrap of tin, and the thermocautery is touched to the tin. It melts at once and the wire is firmly soldered. The projecting ends are cut off; if any sharp point is left this can be buried, too, in a droplet of tin. Or a wedge shaped piece of copper can be heated in the flame and the tip pressed on a block of ammonium chlorid and then on a lump of tin. It melts enough of the tin, which sticks to it, and this is then transferred to the wire to be soldered, already treated with the mordant. There are no twisted ends to compress tissue or break at the weakest point. This soldering of the wire has proved especially useful in cases of fracture of the jaw.

57. **To Transform Street Electric Current for Cystoscope.**—Egidi gives an illustration of a simple home-made device to serve as a rheostat.

58. **Medical Treatment of Dysenteric Abscesses in the Liver.**—The complete failure of surgical measures, in some cases in Macedonia, encouraged Pontano to rely on medical measures alone. His success in some typical cases related has amply demonstrated that with an ameba abscess the

resulting necrosis of liver tissue must be regarded differently from the ordinary pus of a bacterial process. The products of the protozoan process are reabsorbed under the influence of emetin. His cases illustrate the rapid and complete reabsorption of a vast abscess in the liver, even in a case in which there was known associated colon bacillus infection. In this case the liver was reduced from 22 to 12 cm. above the costal arch in twelve days; the leukocytes dropped from 19,000 to 7,500, and repeated examinations of the stools since seem to indicate that the amebic dysentery and the abscess have both been cured. Exploratory puncture in this case had revealed the colon bacillus while encysted amebas were common in the stools. He reiterates in conclusion that "no operation should be attempted for a dysenteric abscess in the liver until a massive course of emetin treatment has been put through."

59. **Clinical Forms of Malaria.**—In concluding this long article Borgherini warns that malaria of a pernicious type, as severe as in the tropics, is encountered now in the near Eastern campaign. The attempt to segregate troops with malaria has failed as the numbers are too large for this.

Rivista di Clinica Pediatrica, Florence

October, 1918, **16**, No. 10

60 *Morbid Associated Movements in Children. P. Busacchi.—p. 505.
61 Growth and Pathology of Twins. A. Borrino.—p. 521. Commenced in No. 9, p. 474.

60. **Synkinesis in Children.**—The case of associated movements described was in a boy of 6 with postdiphtheric paralysis. The muscles of the face and hands were drawn up and distorted with each syllable he tried to speak, even the simplest words. There was no lesion in the cortex, and the synkynesis was bilateral—in both of which points the case differs from others on record, Busacchi remarks. The diphtheric toxin while it paralyzed some of the nerves, seemed to have rendered others more excitable. He describes in detail the probable mechanism of pathologic associated movements in such cases, and reviews the literature.

Gaceta Medica de Caracas

Sept. 15, 1918, **25**, No. 17

62 Organized Prophylaxis of Venereal Diseases. E. Ochoa.—p. 175.
63 Present Status of Intravenous Bacteriotherapy of Typhoid. E. P. de Bellard.—p. 180.

Revista de la Asociación Médica, Buenos Aires

August, 1918, **29**, No. 165

64 *Perforated Chronic Gastric Ulcer. C. I. Allende.—p. 143.
65 Memoirs of Medical Hygienist. E. R. Coni.—p. 158. Cont'n.
66 *Action of Epinephrin on Frog Heart. C. F. Flores.—p. 207.
67 Radiologic Ambulance. C. Heuser.—p. 212.
68 *Lingual Goiter. J. M. Jorge, Jr., and J. Layera.—p. 246.
69 Disarticulation for Chondroma of Femur. N. Tagliavacche.—p. 289.
70 Reflexions on Tuberculosis. J. J. Vitón.—p. 299. Cont'n.
71 Vagotony. A. Austregésilo.—p. 312.

64. **Perforated Chronic Gastric Ulcer.**—The four cases analyzed by Allende presented as the principal element for the diagnosis the sudden intense pain in the epigastrium, usually in the midst of apparent health. Insistent questioning will generally reveal symptoms in the past suggesting possible ulceration. The pulse may keep normal or a little below for the first few hours, which may prove misleading. He advises pouring ether into the peritoneal cavity in concluding the operation, with ample drainage.

66. **Epinephrin and the Frog Heart.**—Flores relates that the heart of the common Argentine frog displays certain physiologic differences from similar animals in Europe and North America. He describes research with epinephrin.

68. **Lingual Goiter.**—Jorge and Layera report in detail two cases of an aberrant thyroid gland at the base of the tongue. Both patients were young women, and the tumor was resected in each. They discuss the literature on the subject, and tabulate the forty-six other cases on record. During the day there is only slight if any interference with breathing, even when the epiglottis is pushed aside by the tumor. But at night, when the muscles of the tongue relax in sleep, there may be episodes of suffocation in certain positions. The tumor may escape detection unless an effort is made to arch the tongue at its base; this throws the tumor into view. The laboratory will exclude syphilis and tuberculosis. With any aberrant goiter, it is necessary to determine whether there is any tendency to thyroid deficit before attempting to remove any or part of the tumor. They regard this as so important that they advise an exploratory incision of the normal thyroid before venturing to remove an aberrant thyroid tumor. Whatever technic is followed for removal of the tumor, tracheotomy seems to be indispensable not only to maintain the respiration but for information in regard to the natural thyroid. Two of the total fifty cases were in infants; there was recurrence after operation in six cases, and postoperative myxedema developed in seven. A colored plate shows the aspect of the lingual thyroid in one case. It contained patches of calcareous degeneration in the one case in which the tumor was removed through an incision. In the other case, it was removed through the mouth under local anesthesia. In two cases the natural thyroid was lacking, and symptoms of myxedema contraindicated any operation.

Semana Medica, Buenos Aires

July 18, 1918, **25**, No. 29

72 Uterine Fibromas. C. A. Castaño.—p. 69.
73 Multiple Nipples. (Politelia.) C. Lanza.—p. 79.
74 Dynamic Retinoscopy. J. L. Pavia.—p. 88.

July 25, 1918, **25**, No. 30

75 Mycotic Flora of Female Genitals. F. A. Deluca.—p. 97.
76 Technic for Film Treatment of Burns. J. M. and M. E. Jeres.—p. 112.
77 Vaccine Treatment of Acne. H. Dasso.—p. 114.
78 Physiologic Phenomena in the Newborn. U. Fernández.—p. 115.

Hospitalstidende, Copenhagen

Oct. 16, 1918, **61**, No. 42

79 *Cartilaginous Exostoses. B. Agerholm.—p. 1425. Commenced in No. 41.
80 *Lipomas as Cause of Ileus. J. Lambrethsen.—p. 1433.

79. **Intermittent Painful and Febrile Cartilaginous Exostoses.**—The case reported by Agerholm is the fourth case on record in which there were recurring attacks of pain, with fever. Nine cases are cited from the records in which the exostoses were painful and tender at times. It is possible that there may be a very mild process of osteomyelitis involved. In Fischer's case, in a boy of 5, each new exostosis as it developed was accompanied by high fever and pains in the bones. In Pels-Leusden's case the first exostosis developed at the age of 28, each new one appearing with fever, pains, loss of appetite and vomiting (unless the patient exaggerated).

80. **Lipomas as Cause of Intermittent Ileus.**—Lambrethsen states that a submucous tumor on a long pedicle obstructed the lumen at the ileocecal junction, causing intermittent ileus in the unmarried woman of 38. In a second case a man of 62 for six years had been having peculiar recurring pains in the abdomen, and vomiting. The intervals were finally only three or four weeks, and the attacks lasted a few hours or days. The symptoms indicated incomplete ileus, and an operation revealed chronic invagination of the upper part of the jejunum entailed by a polypous mucosa tumor. Fully 90 cm. of the bowel were involved in the invagination. He has found records of only fifty-seven similar cases on record, and only thirty-nine were operative cases; the others were casual discoveries. About 50 per cent. were in the large intestine. In a few cases the tumor sloughed off and was eliminated in the stools. In Ninaus' case a stretch, 120 cm. long, was evacuated spontaneously and the patient recovered. The ileus was grave in many cases and from 40 to 50 per cent. succumbed. The prognosis is more favorable when the large intestine alone is involved. In one of his cases there was occult bleeding.

Ugeskrift for Læger, Copenhagen

Oct. 24, 1918, **80**, No. 43

81 Habitual Constipation. VII. T. E. H. Thaysen.—p. 1691. To be continued.
82 Papillomatosis in Rudimentary Urethra with External Female Pseudohermaphroditism. P. Verning.—p. 1701.

JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT, JULY-DECEMBER, 1918

The following journals have been abstracted in the Current Literature Department of THE JOURNAL during the past six months. Any of the foreign journals, except those starred, will be lent by THE JOURNAL to subscribers in the United States and to Fellows of the American Medical Association for a period not exceeding three days. Only one journal may be borrowed at a time. Requests for periodicals should be addressed to the Library of the American Medical Association and six cents in stamps should be enclosed. This covers the average expense of mailing a journal. Domestic journals can be obtained by sending the approximate amount direct to the respective publishers. Thus most of the journals indexed are accessible to the general practitioner, no matter where he may be located.

Acta Scholae medicinalis universitatis imperialis in Kioto. Irregular. 1.50 yen. Kioto.
Amazonas medico. Q. Manaos.
American Journal of Anatomy. Bi-m. $7.50. 36th St. and Woodland Ave., Philadelphia.
American Journal of Diseases of Children. M. $4. American Medical Association, 535 N. Dearborn St., Chicago.
American Journal of Insanity. Q. $5. Johns Hopkins Press, Baltimore.
American Journal of the Medical Sciences. M. $5. Lea & Febiger, 706 Sansom St., Philadelphia.
American Journal of Obstetrics and Diseases of Women and Children. M. $5. William Wood & Co., 51 Fifth Ave., New York.
American Journal of Ophthalmology. M. $10. 7 W. Madison St., Chicago.
American Journal of Orthopedic Surgery. M. $4. 126 Massachusetts Ave., Boston.
American Journal of Physiology. M. $5. Johns Hopkins Medical School, Baltimore.
American Journal of Public Health. M. $3. 126 Massachusetts Ave., Boston.
American Journal of Roentgenology. M. $5. 69 E. 59th St., New York.
American Journal of Syphilis. Q. $5. C. V. Mosby Co., St. Louis.
American Review of Tuberculosis. M. $3. 2419 Greenmount Ave., Baltimore.
Anales de la Facultad de medicina, Montevideo. Bi-m. $2. Montevideo.
Anales de la Facultad de medicina, Universidad de Lima. Bi-m. 6 soles. Lima, Peru.
Anales del Instituto Modelo de clinica medica. Irregular. Gratis. Buenos Aires.
Annaes Paulistas de medicina e cirurgia. M. 15 milreis. São Paulo.
Annales de gynécologie et d'obstétrique. M. 22 francs. Paris.
Annales de médecine. M. 23 francs. Paris.
Annali d'igiene. M. 20 lire. Rome.
Annals of Medical History. Q. $6. Paul B. Hoeber, 67 E. 59th St., New York.
Annals of Surgery. M. $6. J. B. Lippincott Co., 227 S. 6th St., Philadelphia.
Annals of Tropical Medicine and Parasitology. Q. $5. Liverpool.
Archives of Internal Medicine. M. $5. American Medical Association, 535 N. Dearborn St., Chicago.
Archives des maladies de l'appareil digestif et de la nutrition. M. 14 francs. Paris.
Archives des maladies du cœur, des vaisseaux et du sang. M. 22 francs. Paris.
Archives médicales belges. M. 18 francs. Paris.
Archives de médecine des enfants. M. 18 francs. Paris.
Archives de médecine et de pharmacie militaires. M. 40 francs. Paris.
Archives mensuelles d'obstétrique et de gynécologie. M. 25 francs. Paris.
Archives of Ophthalmology. Bi-m. $5. G. P. Putnam's Sons, 2 W. 45th St., New York.
Archives of Pediatrics. M. $3. E. B. Treat & Co., 45 E. 17th St., New York.
Archives of Radiology and Electrotherapy. M. $5. London.
Archivos Españoles de enfermedades del aparato digestivo y de la nutricion. M. 14 pesetas. Madrid.
Archivos Españoles de pediatria. M. 18 pesetas. Madrid.
Archivos Latino-Americanos de pediatria. Bi-m. $3. Buenos Aires.
Boletin de la asociación médica de Puerto Rico. Q. San Juan, Porto Rico.
Boston Medical and Surgical Journal. W. $5. 126 Massachusetts Ave., Boston.
Brazil-medico. W. 20 milreis. Rio de Janeiro.
British Journal of Children's Diseases. Q. $5. London.
British Journal of Surgery. Q. $6.50. William Wood & Company, 51 Fifth Ave., New York.
British Journal of Tuberculosis. Q. $1.25. G. E. Stechert & Co., 151 W. 25th St., New York.
British Medical Journal. W. $10. London.
Bulletin de l'Académie de médecine. W. 23 francs. Paris.
Bulletin of the Johns Hopkins Hospital. M. $3. Baltimore.
Bulletin of the Naval Medical Association of Japan. Irregular. Tokyo.
Bulletins et mémoires de la Société médicale des Hôpitaux de Paris. W. 32 francs. Paris.
California State Journal of Medicine. M. $1. Butler Bldg., San Francisco.
Canadian Medical Association Journal. M. $5. 386 Victoria St., Toronto.
Chirurgia clinica. M. 45 lire. Milan.
Chirurgia degli organi di movimento. Bi-m. 35 lire. Bologna.
Colorado Medicine. M. $2. Metropolitan Bldg., Denver.
Correspondenz-Blatt für schweizer Aerzte. W. 22 francs. Basel.
Cronica medica. Semi-m. 15 francs. Lima, Peru.
Crónica médico-quirúrgica de la Habana. M. 4 pesos. Havana.
Delaware State Medical Journal. M. $1. Wilmington.
Dublin Journal of Medical Science. M. $5.
Edinburgh Medical Journal. M. $6.
Endocrinology: Bulletin of the Association for the Study of Internal Secretions. Q. $5. 1100-1103 Title Insurance Bldg., Los Angeles.
Gaceta de los hospitales. Revista mensual de ciencias medicas. M. $5. Mexico.
Gaceta médica de Caricas. Semi-m. 16 bolivares. Caricas, Venezuela.
Gaceta médica de México. Irregular. $6. Mexico City.
Gaceta medica de Costa Rica. M. $6.00. Costa Rica.
Gann. Irregular. Tokyo.
Gazzetta degli ospedali e delle cliniche. Semi-w. 25 francs. Milan.
Glasgow Medical Journal. M. $5.
Grèce médicale. Semi-m. 12 francs. Athens.
Hospitalstidende. W. 27.3 kronen. Copenhagen.
Hygiea. M. $5. Stockholm.
Illinois Medical Journal. M. $2. 3338 Ogden Ave., Chicago.
Indian Journal of Medical Research. Q. 10s. Calcutta.
Indian Medical Gazette. M. $5. Calcutta.
International Association of Medical Museums. Irregular. Ann Arbor, Mich.
Journal of the American Medical Association. W. $5. 535 N. Dearborn St., Chicago.
Journal of the Arkansas Medical Society. M. $1. Boyle Bldg., Little Rock, Ark.
Journal of Bacteriology. Bi-m. $5. Williams & Wilkins Company, Baltimore.
Journal of Biological Chemistry. M. $3. 2419 Greenmount Ave., Baltimore.
Journal of Cancer Research. Q. $5. Williams & Wilkins Company, Baltimore.
Journal de chirurgie. M. 44 francs. Paris.
Journal of Cutaneous Diseases. M. $5. 7 W. Madison St., Chicago.
Journal of Experimental Medicine. M. $5. Rockefeller Institute for Medical Research, 66th St. and Avenue A, New York.
Journal of the Florida Medical Association. M. $1.50. P. O. Box 136, Jacksonville, Fla.
Journal of General Physiology. Bi-m. $5. Rockefeller Institute for Medical Research, 66th St., and Avenue A, New York.
Journal of Immunology. Bi-m. $5. Williams & Wilkins Company, Baltimore.
Journal of the Indiana State Medical Association. M. $2. 406 W. Berry St., Fort Wayne, Ind.
Journal of Infectious Diseases. M. $5. 629 S. Wood St., Chicago.
Journal of Iowa State Medical Society. M. $2. Des Moines.
Journal of Kansas Medical Society. M. $2. 303 Commerce Bldg., Topeka, Kan.
Journal of Laboratory and Clinical Medicine. M. $3. C. V. Mosby Company, St. Louis.
Journal of Laryngology, Rhinology and Otology. M. $5. London.
Journal of Maine Medical Association. M. $2. Portland, Maine.
Journal of Medical Association of Georgia. M. $1. Lamar Bldg., Augusta, Ga.

W.—Weekly; M.—Monthly; Semi-m.—Semi-monthly; Bi-m.—Bi-monthly; Q.—Quarterly. *Cannot be loaned.

Journal of Medical Research. Bi-m. $4. 240 Longwood Ave., Boston.
Journal of Medical Society of New Jersey. M. $2. 12 Cone St., Orange, N. J.
Journal de médecine de Bordeaux. M. 15 francs.
Journal of Michigan State Medical Society. M. $3.50. Powers' Theatre Bldg., Grand Rapids, Mich.
Journal of Missouri State Medical Association. M. $2. 3517 Pine St., St. Louis.
Journal of Nervous and Mental Diseases. M. $8. 64 W. 56th St., New York.
Journal of Oklahoma State Medical Association. M. $2. Muskogee.
Journal of Parasitology. Q. $2. Urbana, Ill.
Journal of Pharmacology and Experimental Therapeutics. M. $5. 2419 Greenmount Ave., Baltimore.
Journal de radiologie et d'électrologie. M. 28 francs. Paris.
Journal of South Carolina Medical Association. M. $2. Greenville, S. C.
Journal of State Medicine. M. 2 shillings. London.
Journal of Tennessee State Medical Association. M. $2. 601 Cedar St., Nashville, Tenn.
Journal of Tropical Medicine and Hygiene. Semi-m. $5. London.
Journal d'urologie médicale et chirurgicale. M. 42 francs. Paris.
Journal of Urology. Bi-m. $5. Williams & Wilkins Co., Baltimore.
Journal-Lancet. Semi-m. $2. 839 Lumber Exchange, Minneapolis.
Kentucky Medical Journal. M. $2. State and Twelfth Sts., Bowling Green, Ky.
Kitasato Archives of Experimental Medicine. Twice a year. 60 cents. Tokyo.
Lancet. W. $10. London.
Laryngoscope. M. $5. 3858 Westminster Place, St. Louis.
Lyon chirurgical. M. 25 francs.
Lyon médical. M. 15 francs.
Mededeelingen van den Burgerlijken Geneeskundigen Dienst in Nederlandsch-Indië. Irregular. Price varies. Batavia, Java.
Medical Journal of Australia. W. 6 d. Sydney.
Medical Journal of the Siamese Red Cross. 5 ticals. Bangkok.
Medical Record. W. $5. W. Wood & Co., 51 Fifth Ave., New York.
Medicina Ibera. W. 25 pesetas. Madrid.
Medicine and Surgery. M. $4. Medicine and Surgery Publishing Co., Metropolitan Bldg., St. Louis.
Mental Hygiene. Q. $2. National Committee for Mental Hygiene, 50 Union Square, New York City.
Military Surgeon. M. $3.50. Army Medical Museum, Washington, D. C.
Minnesota Medicine. M. $2. Lowry Bldg., St. Paul.
Mitteilungen aus der medizinischen Fakultät der Kaiserlichen Universität Kyushu. Irregular. Price varies. Fukuoka.
Mitteilungen aus der medizinischen Fakultät der Kaiserlichen Universität zu Tokyo. Irregular. Price varies. Tokio.
Modern Hospital. M. $3. Metropolitan Bldg., St. Louis.
National Medical Journal of China. $2. Shanghai.
Nebraska State Medical Journal. M. $2.00. 468 Brandeis Bldg., Omaha.
Nederlandsch Tijdschrift voor Geneeskunde. W. 10.50 florins. Amsterdam.
Neurological Bulletin. M. $3. 69 E. 59th St., New York.
New Orleans Medical and Surgical Journal. M. $2. 1551 Canal St., New Orleans.
New York Medical Journal. W. $5. A. R. Elliott Publishing Co., 66 W. Broadway, New York.
New York State Journal of Medicine. M. $2. 17 W. 43d St., New York.
Norsk Magazin for Lægevidenskaben. M. $5. Christiania.
Northwest Medicine. M. $2. Cobb Bldg., Seattle, Wash.
Nourrisson. Bi-m. 14 francs. Paris.
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SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "E," Editorial; "C," Correspondence; "T," Therapeutics; "Ml," Medicolegal; "P," Propaganda for Reform; "ME," Medical Economics; "ab," abstract; the star (*) indicates an "Original Article" in THE JOURNAL.

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The name of the author follows the subject entry in brackets. The figures in parentheses refer to the paragraph in the Current Medical Literature Department, the number following to the page in THE JOURNAL.

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SOCIETIES

A.—*Association.*
Acad.—*Academy.*
Am.—*American.*
Coll.—*College.*
Conf.—*Conference.*
Cong.—*Congress.*
Conv.—*Convention.*
Dist.—*District.*
Hosp.—*Hospital.*
Internat.—*International.*
M.—*Medical or Medicine.*
Nat.—*National.*
Pharm.—*Pharmaceutical.*
Phys.—*Physician.*
Ry.—*Railway.*
S.—*Society.*
Surg.—*Surgical, Surgeon or Surgery.*

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503- 600—	7	Aug. 17
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687- 784—	9	Aug. 31
785- 863—	10	Sept. 7
863- 936—	11	Sept. 14
937-1016—	12	Sept. 21
1017-1100—	13	Sept. 28
1101-1178—	14	Oct. 5
1179-1250—	15	Oct. 12
1250-1354—	16	Oct. 19
1355-1448—	17	Oct. 26
1449-1534—	18	Nov. 2
1535-1630—	19	Nov. 9
1631-1702—	20	Nov. 16
1703-1784—	21	Nov. 23
1785-1848—	22	Nov. 30
1849-1950—	23	Dec. 7
1951-2032—	24	Dec. 14
2033-2114—	25	Dec. 21
2115-2228—	26	Dec. 28